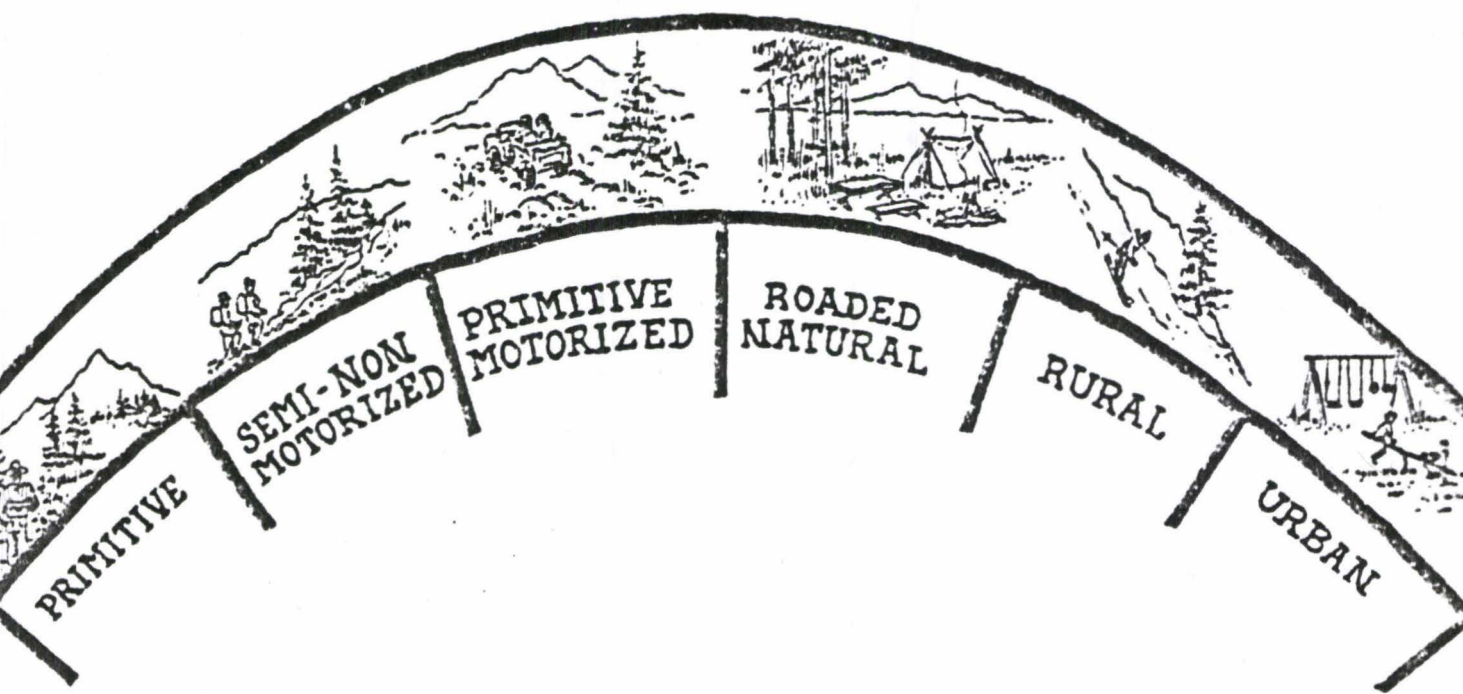


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MANAGING WITH R.O.S.*

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*Recreation Opportunity Spectrum

MANAGING WITH

ROS*

by

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ABSTRACT

The Recreation Opportunity Spectrum (ROS) is a framework for developing recreation planning, research and management concepts. ROS is being applied in recreation research efforts and is the accepted recreation planning procedure for RPA Regional and Forest plans. ROS is not, however, being applied uniformly in on-the-ground management.

The purpose of this paper is to describe management applications using the Recreation Opportunity Spectrum. One application is the use of ROS concepts to implement the Forest Plans. Management direction will be given in ROS terms. Monitoring and evaluation activities will also relate to ROS concepts.

Effects of proposed actions can be displayed using ROS terms and concepts. These effects could be from recreation projects, i.e., building a campground, or from projects relating to other resources that affect the recreation opportunity, i.e., timber sale or mineral development. Effects to be considered include changes in access, other resource uses, on-site management, social interaction, acceptability of visitor impacts and acceptable level of regimentation.

ROS can also be a tool for program development and budgeting. ROS concepts can tie the recreation users' goals with management plans, programs and on-the-ground projects. Programs can include consideration of the recreation opportunity objectives, management prescriptions and standards, use in relationship to capacities, levels and acceptability of change caused by the use, cost effectiveness and consequences and opportunities of different program levels.

The above applications are described using examples on the Grand Mesa, Uncompahgre and Gunnison National Forest. Management direction and standards from the Forest Plan are described. Effects of three projects (one recreation related, one reservoir reconstruction and one mineral development) are described. The Forest's recreation program and budget is described in ROS terms.

The following actions are recommended to facilitate application of Recreation Opportunity Spectrum concepts in recreation management:

1. Nationally incorporate ROS into the RPA Assessment and Program of Work, into the Program Development and Budgeting Process, and into the Management Attainment Reporting System.
2. Write management prescriptions and standards in the ROS format, using physical, social, and managerial settings. Include the concept of limits of acceptable change.
3. Continue to develop the concept of limits of acceptable change and implement these concepts on the ground.
4. Develop a computer program to aid in program development using the ROS approach. The program needs to include consideration of cost effectiveness and returns to the treasury.

TABLE OF CONTENTS

I.	INTRODUCTION	1
A.	Background	1
B.	Statement of the Problem	1
C.	Purpose	3
D.	Objectives	3
E.	Limitations	3
II.	LITERATURE REVIEW	5
A.	Recreation Opportunity Spectrum	5
B.	The R.O.S. in Land Management Planning	6
C.	Recreation Opportunity Spectrum in Management	8
D.	Limits of Acceptable Change	10
III.	DESCRIPTION OF MANAGEMENT APPLICATIONS	13
A.	Data From Forest Plans	13
B.	Evaluating Consequences of Management Actions	15
C.	Developed/Dispersed Management vs. Recreation Opportunity Spectrum Management	16
D.	Program Development and Budgeting	17
IV.	APPLICATIONS ON THE GRAND MESA, UNCOMPAHGRE AND GUNNISON NATIONAL FORESTS	21
A.	Data From Forest Plan	24
B.	Evaluating Consequences of Management Actions	41
C.	Program Development and Budgeting	52
V.	SUMMARY, CONCLUSIONS AND RECOMMENDATIONS	69
VI.	APPENDIX	71

I. INTRODUCTION

A. BACKGROUND

Recreation managers are moving from a posture of managing recreation activities to one of managing recreation opportunities. This paper will explore some of these applications. The background, statement of the problem, the purpose, and the objectives of this paper are discussed in this chapter.

The ROS Users Guide (1981) explains that while the goal of the recreationist is to obtain satisfying experiences, the goal of the recreation resource manager becomes one of providing the opportunities for obtaining these experiences. By managing the natural settings and the activities which occur within them, the manager is providing the opportunities for the recreation experiences to take place.

Driver and Brown (1978) state, "The most important responsibilities wildland recreation managers have are: (1) to provide recreation opportunities which are demanded and appropriate for the area being managed; (2) to prevent unacceptable damage to the resources; and (3) to protect users from serious harm. The relative importance of these three responsibilities varies from area to area".

A goal of recreation management is to provide diverse recreation opportunities. Clark and Stankey (1978) add, "The basic assumption is that quality in outdoor recreation is best assured through provision of a diverse set of opportunities. A wide range of tastes and preferences for recreational opportunities exists among the public and, as Wager (1966) points out, 'Quality seems to be a highly personalized matter'. Providing a wide range of settings varying in level of development, access, and so forth insures that the broadest segment of the public will find quality recreational experiences, both now and in the future."

The Recreation Opportunity Spectrum (ROS) was developed for management and conceptual convenience to describe the possible mixes or combinations of activities, settings, and probable experience opportunities. "The basic premise of the recreation spectrum concept is that a variety of environmental settings 'from the paved to the primeval' are needed to fulfill the many needs, motivations, and preferences that lead people to participate in outdoor recreation". (Stankey (1977)).

B. STATEMENT OF THE PROBLEM

1. ROS concepts are not understood by other land management disciplines and are not understood nor supported by line management.

Providing recreation opportunities involves the physical setting, the social setting and the management setting. These are described in terms foreign to other specialists. The outputs are not clearly defined or linked with management goals. It is hard to compare them with other resource outputs, i.e., animal unit months, thousand board feet.

It has been difficult to relate budget levels to recreation objectives or to describe consequences of not meeting these objectives. This should not be the case. Managing an area for a particular ROS objective can be compared to managing a grazing allotment. The "forage" the recreation manager works with is the physical recreation setting. Certain facilities are needed to meet range management objectives. Facilities are also designed to meet recreation opportunity objectives. Capacities are developed for the grazing allotment by the range manager. The recreation manager also develops capacities.

The recreation manager provides "habitat" as does the wildlife biologist. Both are also concerned by changes in habitat and the effects of these changes. Benefits from a recreation program can be altered by changes in management direction, just as benefits from timber programs can be changed. Consequences and opportunities of proposed changes can be displayed for both programs.

2. ROS is thought of as a planning concept and is not being used in on-the-ground management.

The first applications of the Recreation Opportunity Spectrum were with planning actions. It is established as the system for recreation resource input to Forest Land and Resource Management Planning. Most of these planning concepts have not yet been implemented on the ground. Management techniques for utilizing ROS are just developing and are not commonly applied by the field manager.

3. Recreation programs need to be revised and adjusted for increasing use, reduced budgets, and increased emphasis on cost effectiveness.

The demand for recreation opportunities is increasing each year. Often these increases occur largely independent of budgets or management actions. The "quality" of the recreation experience may be affected, but clear tradeoffs of reduced budgets have not been developed. Outdoor recreation is heavily subsidized with many recreation opportunities being provided at little or no cost to the recreationist. All of the above place the recreation manager at a disadvantage when trying to compete for tight budgets, especially where returns to the treasury are emphasized.

4. Most management actions are related to developed site or dispersed area relationships rather than to Recreation Opportunity Spectrum applications.

Recreation programs began when facilities were built to concentrate people to prevent forest fires and secondly to provide conveniences for the users. These "developed sites" are still an important part of the recreation program and utilize the majority of the budget. The facilities are often what the manager thinks the recreationist wants with less attention being given to the setting. In reality, the developed site is a part of the recreation experience that

is realized - the base from which fishing, hiking, enjoying nature, etc. can occur.

Many facilities are inconsistent with the type of recreation opportunity being provided. Concentrating people is not desired at the primitive end of the spectrum, so dispersed area management evolved. However, it has been found that some "developed" facilities are also needed in these dispersed areas. It would be much better to first identify the recreation opportunity and then provide the facilities necessary to meet those objectives.

C. PURPOSE

The purpose of this paper is to describe possible applications of the ROS system for use at the Forest and Ranger District levels. The intended readers are District Rangers, Forest Supervisors and recreation managers at both levels. The examples apply directly to the Grand Mesa, Uncompahgre, and Gunnison National Forests, but it is hoped that the concepts can be adapted and applied to other areas.

D. OBJECTIVES

1. To describe management applications using the Recreation Opportunity Spectrum.

The purpose is to outline possible techniques to meet recreation management objectives and to facilitate implementing Forest Land and Resource Management Plan direction.

2. Develop priority strategies for recreation programs using ROS and the management applications.

The intention is to develop a framework for displaying the recreation opportunities, demand, management standards, and budget levels in a way that program needs are identified. Cost effectiveness and tradeoffs can be identified for use in program development and budgeting.

3. Relate these applications to specific examples on the Grand Mesa, Uncompahgre and Gunnison National Forests.

E. LIMITATIONS

1. This presentation is a general framework for the application of the Recreation Opportunity Spectrum. Concepts are being developed as they are being used. Concepts and practices need to be revised as new information is developed and more experience is gained.
2. All the data needed to develop the examples was not readily available. Some assumptions and estimates were made, but they are considered reasonable. They need to be checked and verified before actually being used.

In this chapter, some of the background and problems were reviewed. The objectives of describing applications for using the Recreation Opportunity Spectrum in management and planning and applying these to a National Forest was established. A review of what has been done using the Recreation Opportunity Spectrum is next.

II. LITERATURE REVIEW

The Recreation Opportunity Spectrum has been around 3-4 years. In this chapter, a review is made of the concepts involved and previous applications in planning and management.

The goal of recreation management is to provide diverse recreation opportunities. In their final report the Committee of Scientists for Implementation of Section 6 of the National Forest Management Act of 1976, recognized that:

"Managing for recreation requires different kinds of data and management concepts than does most other activities. While recreation must have a physical base of land or water, the product -- recreation experience -- is a personal and social phenomenon. Although the management is resource based, the actual recreational activities are a result of people, their perceptions, wants and behavior."

Driver and Brown (1978) break recreation demand into four associated components which are defined in terms of specific types of opportunities that are demanded:

- Level 1 - Demands for recreation activity
- Level 2 - Demands for opportunities to experience settings that characterize quality of preferred recreation environments
- Level 3 - Demands for opportunities to realize specific psychological outcomes (activity and setting tied together)
- Level 4 - Demands for opportunity to realize the benefits that flow from the satisfying experiences (enhanced, improved, subsequent performance).

Past recreation planning and management has focused on the Level 1 demand (recreation activities). Recreation managers are now moving toward the Level 3 demand in their planning and management.

"The social goal of freedom of choice applies also to outdoor recreation markets; people should have as wide a variety of opportunities to choose from as is possible" (Driver, Brown, 1978). The activity approach to recreation management does not differentiate between the psychological outputs desired, i.e., canoeing on a placid lake vs. canoeing on a white water river. The ROS is a classification system that incorporates both the idea of activity and experience opportunity.

A. RECREATION OPPORTUNITY SPECTRUM

Brown, Driver, Bruns, and McConnell (1979) describe the development of the Recreation Opportunity Spectrum. Guidelines for the system were to:

1. Build on existing systems and not "remake the wheel."
2. Have intuitive appeal to managers and give useful results.
3. Be both simple and inexpensive to implement.
4. Be adaptable to the land planning and management processes being used by different agencies.
5. Give consistent results.

6. Provide objective criteria for evaluating the recreation opportunity potential of different types of resources and landscapes.
7. Assure that the total range of opportunities is covered.
8. Be based on tested behavioral theories that are relevant to recreation choice. ROS must be defined in human as well as physical resource terms simply because of the nature of the demand for resources and services."

Clark and Stankey (1979) state that by describing the factors that influence or define the range of possible settings and by communicating this information to recreationists, they will be able to choose the experiences they desire. A recreation opportunity setting is defined as the combination of physical, biological, social, and managerial conditions that give recreation value to a place.

A recreation opportunity is described in detail in the ROS Users Guide (1981). Excerpts from this booklet are included in Appendix A.

B. THE ROS IN LAND MANAGEMENT PLANNING

The Recreation Opportunity Spectrum is established in Bureau of Land Management and Forest Service land management planning processes. These agencies base their recreation planning system on these concepts. The Forest Service Handbook 1909.12 (1980) states:

Planning for recreation opportunities using the Recreation Opportunity Spectrum is conducted as part of Land and Resource Management Planning. The recreation input includes factors such as supply and demand, issues and identification of alternative responses to those issues which the planner must assess in order to develop management area prescriptions designed to assure the appropriate recreation experience through setting and activity management on the Forest.

Use of the Recreation Opportunity Spectrum and defining prescriptions as recreation input to Land and Resource Management Planning provides a framework for:

1. Establishing outdoor recreation management goals and objectives for specific management areas.
2. Trade-off analysis of available recreation opportunities as characteristic settings would be changed by other proposed resource management actions.
3. Monitoring outputs in terms of established standards for experience and opportunities settings.
4. Providing specific management objectives and standards for project plans.

Brown, Driver, Bruns & McConnell (1979) describe eight activities that need to occur in recreation allocation planning:

1. Estimate demand for specific recreation opportunity.
2. Conduct capability analysis for the lands and waters in the planning area to determine the potential of the resource to provide the recreation opportunities.

3. Determine what recreation opportunities are presently provided on the planning area.
4. Conduct a suitability analysis to determine where and how recreation opportunities should be provided.
5. Integrate recreation opportunity recommendations with recommendations for other resource outputs.
6. Develop alternative plans for resource allocation.
7. Choose that allocation which reflects the most desirable allocation of resources.
8. Develop activity and project plans consistent with the allocation chosen.

Clark and Stankey (1979) describe three concepts related to ROS that are useful in making recreation allocation decisions:

1. Relative availability - This concept addresses the issue of supply as well as the appropriate role of the recreation supplier. It may be considered within a regional framework that extends beyond agency boundaries.
2. Reproducibility and reversibility - This addresses the question of the extent of which an opportunity can be technologically reproduced, as well as the ability of management to revise the outcome of decisions.
3. Spatial distribution - Sharply dissimilar opportunities generally should be kept apart so that conflicts can be minimized.

The ROS Users Guide (1981) recognizes that there may be setting inconsistencies. A setting inconsistency occurs when "the physical, social, and/or managerial settings are not the same on the same piece of ground". They are a basis for developing management prescription alternatives which change the existing physical, social, or managerial setting components to make them consistent for an area, or to purposefully manage an area with a setting inconsistency to attain some specific management objective.

Changes in settings from other factors need to be recognized too. This includes changes due to other resource activities as well as natural changes such as timber growth, geologic erosion, etc.

Seasonal variations may also be important. Activity, setting, and experience opportunities may change significantly as a result of changes in travel restrictions, accessibility and evidence of humans. This is important on Forests which have issues, concerns and opportunities relating to both summer and winter recreation opportunities (ROS Users Guide (1981)).

Capacity is an important consideration in recreation planning. The ROS Users Guide (1981) defines capacity as:

"Recreation capacity is a measure, by Recreation Opportunity Spectrum Class, of the maximum number of people who can obtain given kinds of recreation experiences at an established standard on a Forest within the constraints of resource capability. Capacity indicates the maximum recreation opportunity supply."

The principle factors affecting capacity include:

1. Land Type - topography, resistance to compaction, etc.
2. Vegetation - density, resiliency to use, etc.
3. Social - numbers of contacts, activities, design capacity etc.
4. Other - access, pattern of use, attractiveness, etc.
5. Management objectives for the area - ROS objectives as well as other resource objectives.

A basic principle in considering capacity is that any use produces change. Change, either ecological or sociological, is defined as undesirable only when it conflicts with the area's management objectives. The objectives, in turn, are a function of various constraints and factors: ecological conditions, public attitudes and existing opportunities, and administrative and budgetary considerations. At times, small amounts of use can produce significant changes in soil and vegetation. Also, even low levels of use can result in adverse impacts where solitude is a key objective; where relatively high levels of use is permissible where socialization with others is important. The capacity of a site (or area) to provide certain human experiences can be expanded through intensive management. Capacity is not a fixed value; it is responsive to management (Stankey (1979)).

Haas (1981) suggests that in wilderness, "capacity may or may not entail a determination of a numerical capacity (for management). A numerical capacity should be a last resort managerial effort used after all other efforts have proved futile to stay within levels of acceptable change." Stankey (1977) asserts the manager's task is to determine the "limits of acceptable change", i.e., how much change will be permitted to occur before taking steps to prevent further change.

To summarize, the ROS Users Guide (1981) states, "In the Land and Resource Planning process, the goals and objectives selected for a specific area (management area) are achieved through the implementation of management prescriptions (of management direction). Prescriptions are closely integrated sets of specific management practices scheduled over the entire planning period or portions of the planning period. Most acres within a planning area have the inherent capacity, to some degree, to provide recreation opportunities and experiences. Therefore, management prescriptions for each management area should include consideration for recreation use..... Each prescription should contain minimum guidelines and standards to be met as well as directions concerning the type of activities, settings, and experience opportunities to be managed during the planning time period.

C. RECREATION OPPORTUNITY SPECTRUM IN MANAGEMENT

Clark and Stankey (1979) identify six setting attributes which influence recreation behavior and have management significance when applying ROS concepts:

1. Access into and within the area, the level of difficulty associated with access, and the permitted means of conveyance. In many

cases, the topography and type of vegetation will help define the conveyances that can be used. Managers are able to use a combination of natural features design and maintenance standards, and regulations for determining and enforcing ease of access. (Terms used should describe the physical setting -- remoteness and size criteria.)

2. Other non-recreation resource uses (timber, mining, etc.). This includes the extent to which they are compatible with various recreation activities. Some of these can conflict with recreation opportunities, i.e. primitive experiences. In other cases, a variety of resource management activities might even contribute to visitor enjoyment. The scale at which the activity is conducted, as well as the activity itself, influences perceived compatibility. Planners and managers must consider the lasting effects of a resource activity (mines, clearcuts), as well as the short-term effects (logging trucks, noise from a mine) to determine the impacts on the recreational opportunity. (Terms used should describe the physical setting -- evidence of human criterion.)
3. On-Site Management. This involves the on-site effects of management on the extent, apparentness, and the complexity of modification, including the use of exotic vegetation, landscaping, traffic barriers, facilities (tables, toilets, water supplies) and others. (Terms used should describe the managerial setting criterion.)
4. Social Interaction. This relates to the relative intensity of use per-unit area, including the level of intergroup contact and the space requirements associated with different opportunities. Both natural variations (topography and vegetation patterns) or management actions (access) can greatly influence the actual level of contact among people. Consequently, standard measures of density (number of people or parties per unit area) are inappropriate because they fail to consider the potential for contact between people. The number of people in an area, how they are distributed in space and time, and the probability of interaction between parties are important elements in determining the appropriate social carrying capacities at different points along the opportunity spectrum. (Terms used should describe the social setting criterion.)

It is necessary to consider the acceptable diversity of use because interaction alone is not a sufficient measure of an area's social carrying capacity -- a greater diversity of uses can be accommodated in modern settings than primitive.

5. Level of Regimentation. This involves the nature, extent, and level of control over recreation use exercised by management. A continuum of controls can be described, ranging from subtle techniques -- such as site design and providing visitors with information -- to fairly heavy-handed measures that are authoritarian and perhaps accompanied by legal sanctions. (Terms used should describe the managerial setting criterion.)

Modern opportunities are generally characterized as more highly organized and regulated than primitive types. Ideally, the most primitive opportunities should have few regimenting influences.

With the reality of increasing pressures from use of primitive settings, regimentation may be necessary to protect the integrity of the opportunity and to insure its use into the future.

6. Level of Visitor Impacts. This reflects what is acceptable in different recreation opportunity settings. Human use of resources inevitably results in impacts. The impacts are on resources (trampling of vegetation or polluting of water) and on other people (noise, depreciative behavior, inappropriate activities). The acceptable level of impacts on recreation is a concern to both users and managers. Managers are concerned about maintaining desired recreation opportunities as well as protecting other resource values. Research indicates that manager's perception of what constitutes impacts may be very different (generally more conservative) from users' perceptions. When users' perceptions are considered, acceptable impacts take on a range of conditions across the ROS. Generally, recreationists' tolerances for impacts (ecological, social, or managerial) are greater among modern styles of recreation than among primitive styles in both degree and prevalence. (Terms used should describe the social setting criterion and the physical setting criterion --- evidence of humans.)

Two concepts are useful in resolving how much impact is appropriate -- magnitude and importance. Magnitude can be objectively assessed. But importance is a value judgement which can result in considerable disagreement between managers and recreationists. The importance of impacts must be considered in light of desired opportunity and subsequent impacts on peoples experience. The relative importance people attach to impacts does not vary randomly along the Recreation Opportunity Spectrum. That is, people who choose a particular type of opportunity (modern or primitive, for example) probably hold somewhat similar notions of what is appropriate and in keeping with these kinds of places.

According to Clark and Stankey (1979), the challenges are then to (1) set standards on acceptable impact levels for recreation areas taking expectations into account along with other spectrum factors and concerns such as other resource values and long term goals for the area (limits of acceptable change); (2) provide adequate information about what one will find there so users can make choices about where to go in keeping with their preferences and expectations; and (3) manage and monitor the activities and impacts to ensure that the situation doesn't change inadvertently, thereby adversely affecting the quality of the recreation environment.

D. LIMITS OF ACCEPTABLE CHANGE

The concept of limits of acceptable change is developing as a means of identifying and managing user impact. Haas (1981) defines the limits of acceptable change for wilderness management as, "the amount of human-caused change to biophysical and social components which are tolerable without a loss of wilderness character." This same concept can be utilized to identify and manage user impact throughout the recreation spectrum.

Haas said, "The limits of acceptable (LAC) change is implemented by selecting appropriate LAC indicators and specifying the limits of acceptable change. The wilderness manager may define what is acceptable and unacceptable for both the biophysical and social components. The purpose of selecting LAC indicators and setting standards is to aid in preservation of the wilderness resource by providing managers with a reference point so that when the current quality of the wilderness resource or its uses approach, equal, or exceed such point, mitigating action will be taken."

LAC indicators are either biophysical or social change indicators. Appendix B gives examples of biophysical and social change indicators. Managers will identify several indicators to monitor depending upon (1) the public issues, management concerns, or resource opportunities identified, and (2) the analysis of the current resources and its uses. It may be necessary to establish priorities and to monitor the indicators of greatest concern, Haas (1981).

Several researchers are dealing with the impact issue. Hart & DeByle examined impacts on vegetation, soil and water. They found the impacts occur on small but visible and accessible portions of the area. Conventional standards or definitions of impacts did not seem to work. They suggest visual quality ratings may be more responsive for defining impacts.

Leonard and Plumley (1978) also found available soil inventories and mapping techniques not to be adequate. The conditions vary and the data needs to be site-specific. They suggest the physical capabilities of soils that should be considered are:

1. The ability of the soil to drain.
2. The ability of the soil to withstand erosion.
3. The ability of the soil to support plant growth.
4. The ability of the soil to promote decomposition of human waste.

Edwards (1978) when working with impacts on alpine vegetation emphasizes that managers must understand ecosystems in order to protect them. Christensen, et al (1978) developed data on impacts on water quality. Harrison (1978) has developed a system for predicting off-road vehicle acoustic impact. New data is being developed in all areas of research.

Frissell (1978) developed a simple classification system to inventory and monitor campsite impacts with suggested management actions. Frissell's condition classes and possible management action are shown in Appendix C.

Hendee, et al (1976) developed an inventory system (Code-a-Site) for dispersed recreation sites. The system utilizes edge-punch cards to facilitate field summary and analysis but computer systems can also be utilized.

Many changes related to planned projects can be anticipated and the ROS provides a simple graphic way of portraying these anticipated outcomes and evaluating whether or not they are appropriate or desirable. One of the important issues that must be considered

in an evaluation is the avoidance of inconsistencies (Clark and Stankey, 1979). An inconsistency occurs when the status of a factor (or factors) exceeds the ROS criteria and parameters specified in the area management plan. It is not the inconsistency per se that should be of concern; rather, the consequences of the inconsistencies are the problem, particularly when they are not anticipated or recognized.

Serious problems can develop from inadvertent changes. As the nature of a setting is altered, inconsistencies may occur, resulting in subsequent changes in use. This process of "invasion and succession" (Clark, et al, 1971) can drastically change the nature of the available opportunities, the clientele served, and their recreational experiences. The basic problem of an inconsistency is that it introduces the potential for triggering a chain of events that might alter the entire nature of the intended opportunity. When such a situation develops, rapid changes in the distribution and use of opportunities can occur.

When inconsistencies occur, managers have three basic responses available. First a "no action" response can be adopted. This might be the case if no significant effects are anticipated, at least within the foreseeable future. A second response is to restore the inconsistency to a status in line with the original opportunity, i.e., closure of a road following a timber sale. Finally, managers can respond to an inconsistency by altering the remaining factors to bring them in line - to revise the recreation opportunity provided.

The literature review shows how the Recreation Opportunity Spectrum can provide a framework for integrating recreational opportunities and nonrecreational activities. The central notion of the spectrum is to offer recreationists alternative settings in which they can derive a variety of experiences. Because the management factors that give recreational value to a site are interdependent, management must strive to maintain consistency among these factors so that unplanned or undesired changes in opportunities do not occur. (Clark & Stankey, 1979).

The Recreation Opportunity Spectrum is well established in Forest Planning. Management applications have been suggested but have not been implemented widely. The next chapter will suggest some on-the-ground applications.

III. DESCRIPTION OF MANAGEMENT APPLICATIONS

Management applications using Recreation Opportunity Spectrum concepts are suggested in the previous chapter. This chapter will expand on these concepts and especially those applications for implementing Forest Plans, for evaluating proposed actions, and for developing program and budget proposals.

A. DATA FROM FOREST PLANS

General direction for recreation management on a given National Forest will be provided in the Forest's Land and Resource Management Plan. These directions will be in the form of management prescriptions, (management direction), area allocations, capacities, management standards, and monitoring actions.

1. MANAGEMENT PRESCRIPTIONS

The ROS Users Guide (1981) describes management prescriptions as "closely integrated sets of specific management practices scheduled over the entire planning period or portions of the planning period. Most areas have the inherent capacity, to some degree, to provide recreation opportunities and experiences. Therefore management prescriptions for each management area should include consideration for recreation use."

Some prescriptions emphasize a particular recreation opportunity where other resources are managed to compliment the recreation use. Other prescriptions are primarily for other resource outputs with recreation use a secondary consideration. But all will include some recreation direction.

2. SPATIAL ALLOCATION

The Forest is divided into management areas by vegetative composition and slope class in the Forest Plan. The plan will allocate one management prescription to each area. This gives the direction to be applied to each area. The allocation is based on the capability of the area to produce different goods and services, the desired outputs and priorities for the entire Forest, and the relative costs of providing these outputs. In the planning process alternatives are developed using different resource emphasis and outputs and different mixes of management prescriptions applied to the areas.

When the plan is finally approved, the role of the manager is to apply the selected prescription to each management area. As stated previously, this also gives the recreation management direction for each area.

3. CAPACITIES

The plan will also give an estimate of total or planned recreation use. A capacity is given for each ROS class. This gives an indication of the maximum recreation opportunity supply.

Recreation capacities are estimated by considering the recreation opportunity to be provided. Then the following factors are considered as they affect recreation capacity: land type, vegetation, social considerations (number of encounters, facility design capacity, etc.) and other factors such as access, attractiveness and patterns of use. Management prescriptions also influence recreation capacities by changing access, adding restrictions or changing attractiveness.

Capacities should be considered planning guidelines not rigid numbers used to control people. Capacities can be revised by changing the physical setting (i.e., "hardening the site") or management actions (i.e., providing information to get better dispersal of use).

Capacity is a useful concept from the management standpoint. As recreation use nears the capacity of an area, more user conflicts and more resource impacts occur. These conflicts and impacts require additional management attention. More active management is required as use nears capacity.

4. MANAGEMENT STANDARDS

Minimum acceptable standards have been developed for most management activities in the Rocky Mountain Region. These management standards list the specific tasks or actions necessary to accomplish the various programs at an acceptable level and to meet management objectives. They are designed to be used in costing out activities and practices. Management standards can be considered an extension of the management prescriptions and are more detailed and more specific than the prescriptions. The prescription coupled with the standard gives the complete management direction for an area.

5. MONITORING AND EVALUATION

The planning process also contains a monitoring action plan to monitor the planning assumptions, outputs (planned compared to actual) and accomplishment in meeting planned prescriptions and management standards. Monitoring information is then evaluated to determine the need for plan adjustments or for additional management actions.

Monitoring involves collection of data on both recreation use and the impacts of that use. All use causes some change. The manager's concern is to keep the changes within acceptable limits. The monitoring plan should identify indicators of change (biological or social) and define the threshold beyond which the change is not acceptable.

Priorities need to be set for monitoring actions. Schedules of activities need to be integrated into work plans. Since it is not feasible to monitor all activities or every acre on a Forest, monitoring must be done on a sample basis. Haas (1931) suggests the following location criteria to consider in identifying sites or areas for monitoring:

1. locations where the current situation is believed to be close to or exceeding limit of acceptable change (LAC) standards.
2. locations where the rate of change would be rapid.
3. locations where unacceptable change would be of a long term or permanent nature (slow recovery).
4. locations where change is anticipated due to current or planned uses.
5. locations that are of particular management concern or special value.
6. locations where several indicators can be monitored at the same time.
7. locations where change could be reasonably attributed to a particular use.
8. locations where comparable information has been previously collected.

B. EVALUATING CONSEQUENCES OF MANAGEMENT ACTIONS

Recreation Opportunity Spectrum concepts can also be used in evaluating consequences of management actions. This can be an evaluation of recreation management projects. It can also be an evaluation of the effects of other management activities on recreation opportunities.

In the environmental analysis process for a project, these concepts can be used to describe the effects on the recreation opportunities provided. The current situation can be compared to the anticipated changes as a result of the project. Clark and Stankey (1979) describe six opportunity setting factors useful in describing these effects. They are:

1. Access
2. Other non-recreational resource uses
3. On-site management
4. Social interaction
5. Acceptability of visitor impacts
6. Acceptable level of regimentation

These factors can be described using ROS setting criteria and can be used to manage the recreation setting to achieve a desired recreation opportunity. They can also be used to identify inconsistencies and to develop actions to correct these inconsistencies.

The environmental analysis should also describe the change in Recreation Opportunity Spectrum as the result of the proposed action. This affects the overall recreation opportunity supply--either positively or negatively. The factors of relative availability and reproduceability should be considered.

C. DEVELOPED/DISPERSED MANAGEMENT vs. RECREATION OPPORTUNITY SPECTRUM MANAGEMENT

The Recreation Opportunity Spectrum allows the recreation manager to provide diverse recreation opportunities to meet the expectations of the recreation users. The spectrum focuses on the relationships between physical, social and managerial settings, in providing these recreation opportunities. ROS allows a consistent linkage from broad recreation objectives, to management prescriptions and standards, to project work plans and to monitoring and evaluation actions. Actions, objectives and standards are tied to recreation users' preferences.

Facilities are necessary in many cases to provide the desired recreation opportunity. The facilities are used to accomplish the physical, social and managerial setting objectives. The amount and kinds of facilities would depend on the settings and on the activities being provided. In some cases they are needed to protect the physical environment, in some cases to provide the desired social setting, and in some cases as a management tool.

The developed site approach sometimes fails to take into consideration recreation opportunity objectives. There are different levels of development but the objective of the developed sites is to concentrate people. Concentrations of people is not consistent with recreation opportunities at the primitive end of the spectrum.

The developed/dispersed approach does not tie directly with recreation opportunities or with management prescriptions. Programs and budgets based on a developed and dispersed breakdown often fail to realize program needs from the recreationist's standpoint.

Since "developed sites" should provide recreation opportunities compatible with the area they are in, they can be considered an integral part of that area. The "developed" and "dispersed" components can be taken together to provide the recreation opportunity as prescribed in the management prescription. The capacity of the management area would then be a total of the "developed" and "dispersed" components.

Lyle Laverty, Forest Service Washington Office Recreation Specialist, stated at the September 1981 Recreation Shortcourse at Clemson University, that in the 1985 Resources Planning Act Program Update the recreation outputs will be expressed in Recreation Visitor Days by ROS class (RVD's/ROS). This update will also recognize fewer benefits from lower standard operations than with programs operated at a higher standard.

These concepts can be utilized in the program development and budgeting process so that funding priorities can be tied more closely with priorities for recreation opportunity settings. Also, opportunities and consequences of various programs can be more clearly displayed.

Developed and dispersed outputs are used to develop current programs and budgets. These outputs need to be displayed but the program can be put together using ROS concepts and objectives.

D. PROGRAM DEVELOPMENT AND BUDGETING

A program developed with ROS concepts should include consideration of ROS recreation opportunity objectives, management prescriptions and standards, use in relationship to capacity, limits of acceptable change concepts, cost effectiveness, and consequences or opportunities for different program levels.

1. ROS RECREATION OPPORTUNITY OBJECTIVES

The recreation opportunity class that an area is being managed for affects the kinds of actions to be included in the program. Biological, social and managerial setting objectives all vary by ROS class. These differences need to be recognized as the program is developed.

2. MANAGEMENT PRESCRIPTIONS AND STANDARDS

ROS objectives are further defined in management prescriptions and standards. These give specific directions that can be translated into funding and employment needs.

The standards can be expressed at different levels or intensities depending on planning and management objectives. These include:

- a. Custodial management - This is the fewest actions that can feasibly be considered and still meet the legal obligations of a landowner or administrator. This level provides for some resource protection but not for recreation user conveniences. Some recreation opportunities are provided but these do not fully meet management prescriptions and standards.
- b. Reduced service management - This level meets the minimum requirements of the prescriptions and standards. Recreation users are expected to help with cleanup and protection of the sites. Some convenience facilities or measures are provided. Recreation fees would not be charged.
- c. Full service management - This level fully meets the recreation opportunity objectives and the prescriptions and standards. Recreationists' expectations can generally be realized. Convenience facilities, where needed to meet objectives, are provided. Fees are charged at qualifying facilities or areas.

3. USE IN RELATIONSHIP WITH CAPACITIES

As recreation use increases, user conflicts and resource impacts also increase. This increases the possibility of exceeding limits of acceptable change. These factors need to be recognized in program development.

Recreation use, especially in the short-term, is influenced more by external factors than it is by program levels. Changes in available opportunities elsewhere may lead to displacement and to increased competition in other areas. External factors, such as population levels, disposable income, work and play habits, availability of gas, etc., largely determine the amount of recreation use realized. Reduced budgets can affect the kind and location of use but does not usually result in a proportional reduction in total use. Reduced quality and unmet expectations may result, however.

4. LIMIT OF ACCEPTABLE CHANGE (LAC) CONCEPTS

Recreation opportunity objectives are met only as long the changes caused by the recreation use remain within acceptable limits. The LAC concepts are useful in program development to identify when additional management controls or restrictions need to be implemented, when site and facility rehabilitation is necessary, or when additional facilities need to be constructed.

5. COST EFFECTIVENESS AND RETURNS TO THE TREASURY

Recreation benefits are identified in the planning process. These are sometimes based on activities (i.e., hunting, skiing), sometimes on kind of area (i.e., wilderness), but not generally by ROS recreation opportunity class. To determine cost effectiveness an estimate of benefits by ROS class needs to be made. This can be done by considering the kinds of activities, the type of area, and the values used in the planning process.

The benefits will differ by management intensity. At full service management, the recreation objectives and recreationist' expectations are met and full value is received. At reduced service and lower program levels some expectations would not be realized and benefits would be reduced. A benefit-cost ratio can be estimated for each program level and each ROS class.

Returns to the treasury are important considerations in program development. The recreation fees expected can be estimated and displayed. Fees are generally collected only at the full service level, except for special use permit fees for services provided by the private sector.

6. CONSEQUENCES AND OPPORTUNITIES

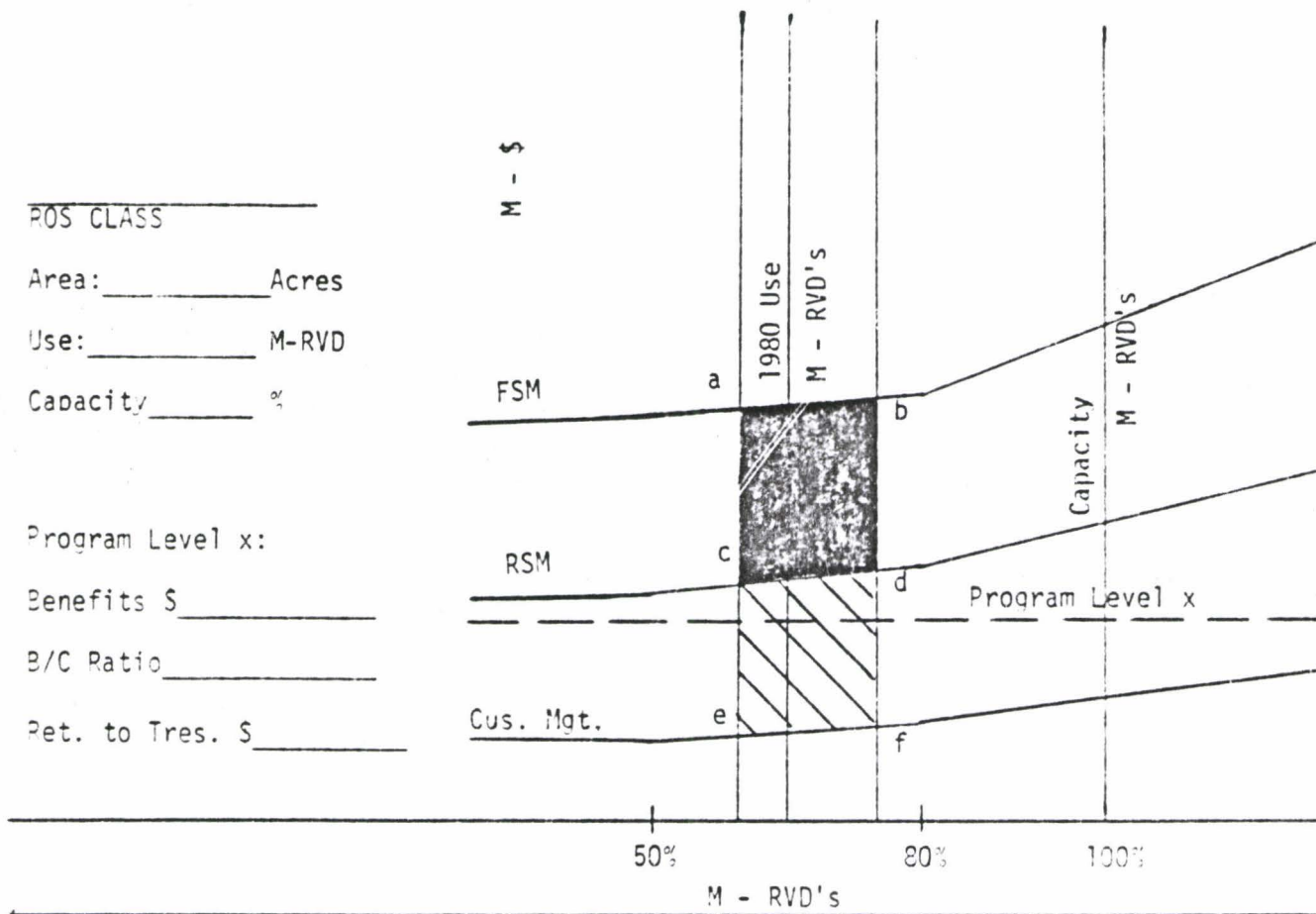
When the above have been displayed, it becomes relatively easy to identify the consequences and opportunities for different program levels. These can be expressed in terms of:

- a. Management prescription and standard met for each ROS class.

- b. Likelihood of staying within limits of acceptable change or risk of exceeding some specific factors and what effect this will have.
- c. Benefit-cost ratio and returns to the treasury.

The program can be visually displayed as shown in Figure 1.

Figure 1 - Graphic Presentation of Recreation Program in Any ROS Class



The horizontal axis displays recreation visitor days. The capacity of the ROS class and current and expected use are shown. In the example this range is -5% to +10% of 1980 use.

The vertical axis shows dollars. The funds needed to meet the various management standards is shown as well as the program levels. In the example program level is only 66% to RSM level. Therefore in this example 2/3 of the area would be managed according to RSM direction and 1/3 according to custodial management direction.

The graph can also show data such as shown at the left. This can be helpful in reaching a decision on desired program levels.

Some observations and interpretations that can be made from the sample in Figure 1 are:

1. With the example given, to meet management standards (RSM-FSM) feasible programs would fall within the shaded area a, b, c, d. If extensive management is an option, the programs could go down to e, f.
2. For any given program the corresponding management standard that could be accomplished can be shown. The opportunities and consequences can then be estimated.
3. Benefits are different for each management standard, based on the costs and the estimated values received.
4. Opportunities for increased benefits and added management standards from increased funding can also be shown.
5. The anticipated variation in recreation use needs to be considered. Current use and historical trends are good starting points. But seasonal variations, changing populations, use patterns, and economic conditions and off-Forest developments can alter the range of expected use.
6. Program levels are more sensitive to amount of recreation use as capacities are reached. At low use levels, changes in recreation use affects program needs very little. However, changes in use near capacity levels can result in the need for revised programs.
7. Revisions in capacity estimation would require recomputing the presentation and could result in a different recommended program. This could be a smaller capacity from reduced access and additional closures or restrictions. It could be larger due to added facilities or access, to site protection measures, and to information provided recreation users to get more uniform distribution, i.e., with the Recreation Opportunity Guide.

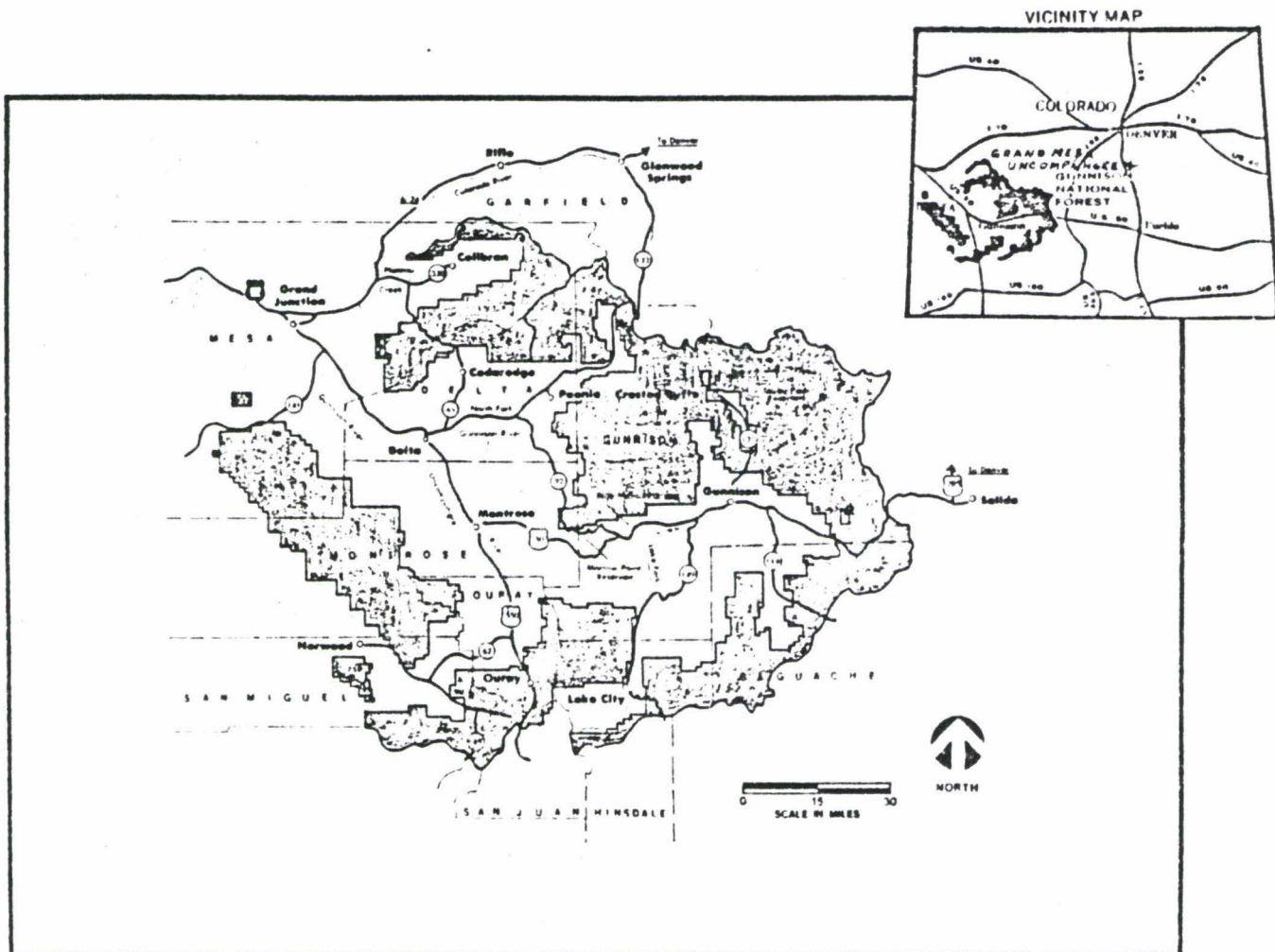
In this chapter a general description was made of management applications using Recreation Opportunity concepts. These included implementing planning direction, evaluating proposed actions and developing programs. The next chapter will discuss some specific examples on the Grand Mesa, Uncompahgre and Gunnison National Forest.

IV. APPLICATIONS ON THE GRAND MESA, UNCOMPAHGRE AND GUNNISON NATIONAL FORESTS

The previous chapters developed proposals for implementing Recreation Opportunity Spectrum concepts in management actions. This chapter will apply these concepts to specific examples on the Grand Mesa, Uncompahgre and Gunnison National Forests.

The Grand Mesa, Uncompahgre and Gunnison National Forests are a three million acre expanse of National Forest System land in Western Colorado, lying generally between Grand Junction, Ouray and Gunnison (see Figure 2).

Figure 2 - Location Map of Grand Mesa, Uncompahgre and Gunnison National Forest



In addition to 2.2 million recreation visitor days, annual outputs from these Forests include:

28 million board feet of timber
 320 thousand animal unit months of domestic livestock grazing
 83 thousand deer and elk carrying capacity for winter range.

Water production is becoming increasingly important as the Forests are at the headwaters of the Gunnison, Uncompahgre and San Miguel Rivers, all tributaries of the Colorado River System. Historical mineral development is evident and is again emerging, especially with energy minerals, including oil and gas. Classified wilderness totals nearly 500,000 acres in 8 units.

Thirty-six percent of the recreation use occurs in "developed sites" and 64% in "dispersed areas". This use by kind of site is summarized as follows:

Developed Recreation	578 MRVD	
Downhill Skiing	222 MRVD	36%
Disp-nonmotorized*	210 MRVD	
Disp-motorized	1,189 MRVD	64%
	<u>2,199 MRVD</u>	

*Includes Wilderness Use

Major recreation activities are summarized as follows:

	MRVD	%
Camping	606	28
Auto Travel	345	16
Fishing	243	11
Downhill Skiing	189	8
Hunting	165	7
Resort and Rec. Res.	117	5
Hiking	105	5
Picnicing	72)
Other Motorized Travel	60)
Snowmobile	53)
Gather Forest Prod.	41)
Other Winter Sports	40) 20
Viewing Scenery	40)
Horseback	34)
Watercraft	28)
Other Activities	61)
	<u>2,199</u>	

The current program, based on the developed/dispersed breakdown and reported outputs, is as follows:

	\$		Outputs
Developed Sites	460,000	FSM	240 M PAOT-Days
Recreation Construction	75,000	RSM	425 M PAOT-Days
Dispersed Areas	125,000	RSM	1,250 M Acres
Wilderness Areas	90,000	RSM	485 M Acres
	<u>\$750,000</u>		

The Forests have been inventoried for the Forest Plan using the Recreation Opportunity Spectrum. Acres, capacities and use are summarized by ROS class in Figure 3. "Developed sites" are added as facilities in each corresponding ROS class.

Figure 3 - Summary of Recreation Opportunity
Spectrum Acres, Capacities and Use
Grand Mesa, Uncompahgre and Gunnison National Forest

	M. Acres M- (PAOT-Days)	M-RVD Capacity	1980 Use	% of Cap.
<u>Primitive</u>				
	217.9	29.9	19.9	67%
Public Fac.	-			
Pvt. Sector	-			
	<u>217.9</u>	<u>29.9</u>	<u>19.9</u>	<u>67%</u>
<u>Semi-Primitive Nonmotorized</u>				
	317.8	317.8	190.0	60%
Public Fac.	-			
Pvt. Sector	-			
	<u>317.8</u>	<u>317.8</u>	<u>190.0</u>	<u>60%</u>
<u>Semi-Primitive Motorized</u>				
	1,265.1	550.2	492.9	90%
Public Fac. (12.8)		10.2	8.1	79%
Pvt. Sector (238.0)		108.6	53.9	50%
	<u>1,265.1</u>	<u>669.0</u>	<u>554.9</u>	<u>83%</u>
	(250.3)			
<u>Roaded Natural</u>				
	619.2	3,161.4	522.2	17%
Public Fac. (599.3)		479.5	300.7	63%
Pvt. Sector (660.2)		293.6	140.4	48%
	<u>619.2</u>	<u>3,934.5</u>	<u>963.3</u>	<u>24%</u>
	(1,259.5)			
<u>Rural and Urban</u>				
	34.1	342.8	174.1	51%
Public Fac. (177.8)		142.2	115.4	81%
Pvt. Sector (523.7)		279.5	181.5	65%
	<u>34.1</u>	<u>764.5</u>	<u>471.0</u>	<u>62%</u>
	(701.5)			
<u>TOTALS</u>				
	2,953.1	4,402.1	1,399.1	32%
Public Fac. (789.9)		631.9	424.2	67%
Pvt. Sector (1,421.3)		621.7	375.8	55%
	<u>(2,211.8)</u>			
		5,715.7	2,199.1	38%

Following are some examples of management applications using POS concepts on the Grand Mesa, Uncompahgre and Gunnison National Forests

A. DATA FROM FOREST PLANS

The Forest Plan is just being developed. Data that will be used in management will include:

1. MANAGEMENT PRESCRIPTIONS (DIRECTION)

Minimum conditions that must be met on all areas of the Forest are identified as Management Requirements.

Management Requirements set the minimum conditions that must be maintained while implementing the Plan. Standards and guidelines represent the minimum levels of management that must be met for each resource element. They guide implementation of any management activity undertaken on the Forest.

Management Requirements establish the broad management requirements that are consistent with multiple-use, sustained yield principles. These standards are derived from laws, regulations, policy, and professional knowledge. This material supplements the management standards and guidelines included in the NFMA regulations.

The Management Requirements apply to all areas of the Forest, except designated wilderness and congressionally designated wilderness study areas. The general direction and standards and guidelines will apply in addition to individual management prescriptions for each management area on the Forest.

Figure 4 displays the Management Requirements for recreation management on all National Forest System land on the Forest.

Each prescription has multiple-use outputs but gives emphasis to a particular resource or group of resources. Some prescriptions emphasize the recreation resource. These include the four wilderness prescriptions and semi-primitive motorized and non-motorized prescriptions. Recreation is also emphasized in Prescription 31 which is summarized in Figure 5.

Some prescriptions emphasize other resources. Recreation uses are included in these prescriptions but recreation capacities may be reduced because of increased restrictions where conflicts occur. The recreation direction in two prescriptions are included as examples in Figures 6 and 7.

2. SPATIAL ALLOCATION

The Forest Plan will include a map showing the prescriptions applied to the management areas. This gives the management direction to each specific unit of land. Three examples are shown as Figures 8, 9, and 10.

Figure 4

MANAGEMENT REQUIREMENTS for Recreation Management

MANAGEMENT ACTIVITIES	GENERAL DIRECTION	STANDARDS & GUIDELINES																																																											
Dispersed Recreation Management (A14 and 15)	01 Provide a broad spectrum of dispersed recreation opportunities in accordance with the established Recreation Opportunity Spectrum (ROS) classification for the management area. (0351) (FDR)																																																												
	02 Close or rehabilitate dispersed sites where unacceptable environmental damage is occurring. (0040) (FDR)	a. Close sites that cannot be maintained in Frissell Condition Class 1, 2, or 3 (Campsite Condition, Frissell, S.B.; Journal of Forestry August 1978). (6023) (FDR) b. Rehabilitate sites that are in Frissell condition class 4 (6197) (FDR)																																																											
	03 Manage dispersed recreation activities to not exceed the established PAOT/acre capacity. (0352) (FDR)	a. Standards and Guidelines: ----- Recreation use and capacity range during the snow-free period (PAOT/acre): Capacity Ranges <table><tr><th>ROS Class</th><th>Very Low</th><th>Low</th><th>Moderate</th><th>High</th></tr><tr><td>-----</td><td>-----</td><td>-----</td><td>-----</td><td>-----</td></tr><tr><td>Primitive</td><td>.001</td><td>.002</td><td>.007</td><td>.025</td></tr><tr><td>-----</td><td>-----</td><td>-----</td><td>-----</td><td>-----</td></tr><tr><td>Semi-primitive Nonmotorized</td><td>.004</td><td>.008</td><td>.05</td><td>.08</td></tr><tr><td>-----</td><td>-----</td><td>-----</td><td>-----</td><td>-----</td></tr><tr><td>Semi-primitive Motorized</td><td>.004</td><td>.008</td><td>.05</td><td>.08</td></tr><tr><td>-----</td><td>-----</td><td>-----</td><td>-----</td><td>-----</td></tr><tr><td>Roaded Natural</td><td>.04</td><td>.08</td><td>1.2</td><td>2.5</td></tr><tr><td>-----</td><td>-----</td><td>-----</td><td>-----</td><td>-----</td></tr><tr><td>Rural</td><td>.5</td><td>.8</td><td>5.0</td><td>7.5</td></tr><tr><td>-----</td><td>-----</td><td>-----</td><td>-----</td><td>-----</td></tr></table>	ROS Class	Very Low	Low	Moderate	High	-----	-----	-----	-----	-----	Primitive	.001	.002	.007	.025	-----	-----	-----	-----	-----	Semi-primitive Nonmotorized	.004	.008	.05	.08	-----	-----	-----	-----	-----	Semi-primitive Motorized	.004	.008	.05	.08	-----	-----	-----	-----	-----	Roaded Natural	.04	.08	1.2	2.5	-----	-----	-----	-----	-----	Rural	.5	.8	5.0	7.5	-----	-----	-----	-----
ROS Class	Very Low	Low	Moderate	High																																																									
-----	-----	-----	-----	-----																																																									
Primitive	.001	.002	.007	.025																																																									
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-----	-----	-----	-----	-----																																																									
Rural	.5	.8	5.0	7.5																																																									
-----	-----	-----	-----	-----																																																									
	* VERY LOW applies to alpine LOW applies to rock, mtn grass, and clearcuts 1-20 years old. MODERATE applies to LP size class 9; mtn grass; PP size class 9, B, and 7; DF size class 9, B, and 7; Aspen size class 9; SF size class 7; shelterwood 90-120 years old; selection cuts 1-20 years old and clearcuts 80-120 years old. HIGH applies to SF size class 9 and B; LP size class 8 and 7; Aspen size class 8 and 7 and clearcuts 20-80 years old. (6195) (FDR)																																																												

Figure 4 (cont)

MANAGEMENT REQUIREMENTS for Recreation Management

MANAGEMENT
ACTIVITIES

GENERAL
DIRECTION

STANDARDS &
GUIDELINES

CONTINUATION OF:

Dispersed
Recreation
Management
(A14 and 15)

Reduce the above use level coefficients as necessary to reflect usable acres, patterns of use, and general attractiveness of the specific management area type as described in the ROS users guide, Chapter 25

04 Prohibit camping within 100 feet from lakes and streams unless exceptions are justified by terrain or specific design which protects the aquatic ecosystem.

(0353) (FDR)

05 Manage resource activities and facilities in accordance with the Regional Acceptable Work Standards.

(0391) (FDR)

a. FBM 1900, R2 ID No. 2, 9/8/81
(6194) (FDR)

Recreation
Management
(Private and
Other Public
Sector)
(A15)

01 Ensure that private and other public sector sites which are adjacent to, or provide an access point into a wilderness complements wilderness management objectives.

(0457) (FDR)

UNIFORM FOREST MANAGEMENT PRESCRIPTION 31

(Emphasis is on roaded-natural recreation opportunities.)

A. MANAGEMENT PRESCRIPTION SUMMARY

Management emphasizes roaded-natural recreation opportunities. This prescription is applied to major highways through the Forest. Visual quality will be maintained or improved. Landscape rehabilitation may be used to restore landscapes to a desirable visual quality.

Range management will reduce conflicts between recreation and livestock. Vegetation management including timber harvest will enhance the visual resource, recreation setting, and wildlife habitat diversity.

The area is open to motorized vehicle use.

B. MANAGEMENT REQUIREMENTS

MANAGEMENT ACTIVITIES	GENERAL DIRECTION	STANDARDS & GUIDELINES
Dispersed Recreation Management (A14 and 15)	01 Emphasize roaded natural motorized recreation opportunities. (0435) (02B)	a. Specify off-road vehicle restrictions based on ORV use management (FSM 2355, R2 Supp 88) (6003) (02B)
	02 Manage to provide for high social interaction with other groups or individuals. (0417) (02B)	b. See FSM 2331, FSM 7732, FSM 7709 12 (Trails Handbook), FSM 7107 11a and 11b (Sign Handbook) (6226) (02B)
		a. Maximum use and capacity - trail and camp encounters during peak use days are less than 30 other parties per day - trail and area-wide use capacity

MANAGEMENT PRESCRIPTION 31

D. MANAGEMENT REQUIREMENTS

MANAGEMENT
ACTIVITIESGENERAL
DIRECTIONSTANDARDS &
GUIDELINES

CONTINUATION OF:

Dispersed
Recreation
Management
(A14 and 15)

Use Level	Open Lands	Forest & Shrub Lands
On Trails		
Area Wide: (PA01/Acre)		
RN	.04-.08	1 2-2 5
R	.5- .8	5 0-7.5

- reduce the above use levels
where unacceptable changes to
the biophysical resources will
occur.
(6267) (02B)

03 Prohibit motorized vehicle use off of Forest System
roads and trails in alpine, brumholz, mountain grass, and
mountain shrub.
(0154) (02B)

Recreation
Management
(Private and
Other Public
Sector)
(A16)

01 Encourage development of private sector recreation
oriented support services.
(0161) (02B)

UNIFORM FOREST MANAGEMENT PRESCRIPTION 16

(Emphasis is on wood-fiber production and utilization.)

A. MANAGEMENT PRESCRIPTION SUMMARY

This prescription will produce timber on spruce-fir, lodgepole pine, and ponderosa pine types by 3-step shelterwood harvest method. Intermediate harvest in regenerated or existing seed, sapling, and pole size lodgepole and ponderosa pine stands will be used to increase or maintain fiber production. Forest land is classified suitable.

Semi-primitive recreation opportunities will be provided. The prescription will enhance wildlife habitat diversity. Livestock grazing will be permitted. Water yield will increase. Roads, trails, and area will be open for motorized vehicle use.

B. MANAGEMENT REQUIREMENTS

MANAGEMENT ACTIVITIES	GENERAL DIRECTION	STANDARDS & GUIDELINES								
Dispersed Recreation Management (A14 and 15)	01 Emphasize semi-primitive motorized recreation opportunities. Increase opportunities for primitive road motorized trail use and off-road vehicle (ORV) use. Specific land areas or travel routes may be closed seasonally or year-round for compatibility with adjacent area management, to prevent resource damage, for economic reasons, to prevent conflicts of use, and for user safety. (0152) (07E)	a. Specify off-road vehicle restrictions based on ORV use management (FSM 2355, R2 Supp 88). (6083) (07E) b. See FSM 2331, FSM 7732, FSH 7709.12 (Trails Handbook), FSH 7109.11a and 11b (Sign Handbook). (6226) (07E)								
	02 Manage areas where roads and/or trails are closed to motorized recreation use to allow for moderate to high contact with other nonmotorized recreation groups or individuals. (0478) (07E)	a. Maximum use and capacity: - trail and camp encounters during peak use days are less than 30 other parties per day. - trail and area-wide use capacity: <table> <tr> <th>Use Level</th><th>Open Lands</th><th>Forest & Shrub Lands</th></tr> <tr> <td>On Trails (PAOT/Mile)</td><td>2-3</td><td>9-11</td></tr> <tr> <td>Area-Wide (PAOT/Acre)</td><td>.004 to .008</td><td>.05 to .08</td></tr> </table>	Use Level	Open Lands	Forest & Shrub Lands	On Trails (PAOT/Mile)	2-3	9-11	Area-Wide (PAOT/Acre)	.004 to .008
Use Level	Open Lands	Forest & Shrub Lands								
On Trails (PAOT/Mile)	2-3	9-11								
Area-Wide (PAOT/Acre)	.004 to .008	.05 to .08								

D. MANAGEMENT REQUIREMENTS

MANAGEMENT PRESCRIPTION 16

MANAGEMENT
ACTIVITIESGENERAL
DIRECTIONSTANDARDS &
GUIDELINES

CONTINUATION OF:
Dispersed
Recreation
Management
(A14 and 15)

03 Manage areas within one-half mile of local roads and/or trails open to motorized recreation use to allow for moderate to high contact with other motorized groups or individuals.

(0479) (07E)

04 Manage areas within one-half mile of forest arterial and collector roads to allow for high contact with other groups or individuals during summer.

(0480) (07E)

- reduce the above use levels where unacceptable changes to the biophysical resources will occur.

(6227) (07E)

a. Maximum use and capacity:

- trail and camp encounters during peak use days are less than 30 other parties per day.
- trail and area-wide use capacity:

Use Level	Open Lands	Forest & Shrub Lands
On Trails		
Area-Wide		
(PAOI/Acre)		
RN	.04-.08	1 2-2 5
R	.5-.8	5 0-7 5

- reduce the above use levels where unacceptable changes to the biophysical resources will occur.

(6269) (07E)

05 Permit undesignated sites in Frissell condition class 1 through 3 where unrestricted camping is permitted.

(0174) (07E)

06 Close and restore Frissell Condition Class sites 4 and 5.

(0175) (07E)

07 Prohibit motorized vehicle use off of Forest System roads and trails in alpine, brumholz, mountain grass, and mountain shrub.

(0154) (07E)

GRAND MESA, UNCOMPAHGRE AND GUNNISON NATIONAL FORESTS MANAGEMENT PRESCRIPTION 20

(Emphasis is on maintaining rangeland in a satisfactory condition.)

A. MANAGEMENT PRESCRIPTION SUMMARY

This prescription will emphasize improved range conditions. Forage composition will be improved. Semi-primitive motorized recreation opportunities will be provided. The prescription will utilize available forage and maintain forage vigor without degrading wildlife habitat. Vegetation management will be permitted in aspen, oak, and pinion-juniper. Motorized vehicle use will be restricted.

B. MANAGEMENT REQUIREMENTS

MANAGEMENT ACTIVITIES	GENERAL DIRECTION	STANDARDS & GUIDELINES								
Dispersed Recreation Management (A14 and 15)	01 Provide semi-primitive motorized recreation opportunities. (2046GM) (06C)	a. Specify off-road vehicle restrictions based on ORV use management (FSM 2355, R2 Supp BB). (60B3) (06C) b. See FSM 2331, FSM 7732, FSM 7709.12 (Trails Handbook), FSM 7109.11a and 11b (Sign Handbook). (6226) (06C)								
	02 Manage areas where roads and/or trails are closed to motorized recreation use to allow for moderate to high contact with other nonmotorized recreation groups or individuals. (047B) (06C)	a. Maximum use and capacity: - trail and camp encounters during peak use days are less than 30 other parties per day - trail and area-wide use capacity: <table> <tr> <th>Use Level</th><th>Open Lands</th><th>Forest & Shrub Lands</th></tr> <tr> <td>On Trails (PAOT/Mile)</td><td>2-3</td><td>9-11</td></tr> <tr> <td>Area-Wide (PAOT/Acre)</td><td>.004 to .008</td><td>.05 to .09</td></tr> </table>	Use Level	Open Lands	Forest & Shrub Lands	On Trails (PAOT/Mile)	2-3	9-11	Area-Wide (PAOT/Acre)	.004 to .008
Use Level	Open Lands	Forest & Shrub Lands								
On Trails (PAOT/Mile)	2-3	9-11								
Area-Wide (PAOT/Acre)	.004 to .008	.05 to .09								

MANAGEMENT PRESCRIPTION 20

B MANAGEMENT REQUIREMENTS

MANAGEMENT ACTIVITIES

GENERAL DIRECTION

STANDARDS & GUIDELINES

CONTINUATION OF:

Dispersed
Recreation
Management
(A14 and 15)

03 Manage areas within one-half mile of local roads and/or trails open to motorized recreation use to allow for moderate to high contact with other motorized groups or individuals.

(0479) (06C)

04 Manage areas within one-half mile of forest arterial and collector roads to allow for high contact with other groups or individuals during summer.

(0480) (06C)

- reduce the above use levels where unacceptable changes to the biophysical resources will occur.

(6227) (06C)

a. Maximum use and capacity:

- trail and camp encounters during peak use days are less than 30 other parties per day
- trail and area-wide use capacity:

Use Level	Open Lands	Forest & Shrub Lands
On Trails		
Area-Wide:		
(PAOT/Acre)		
RN	04-08	1.2-2.5
R	5-8	5.0-7.5

- reduce the above use levels where unacceptable changes to the biophysical resources will occur.

(6269) (06C)

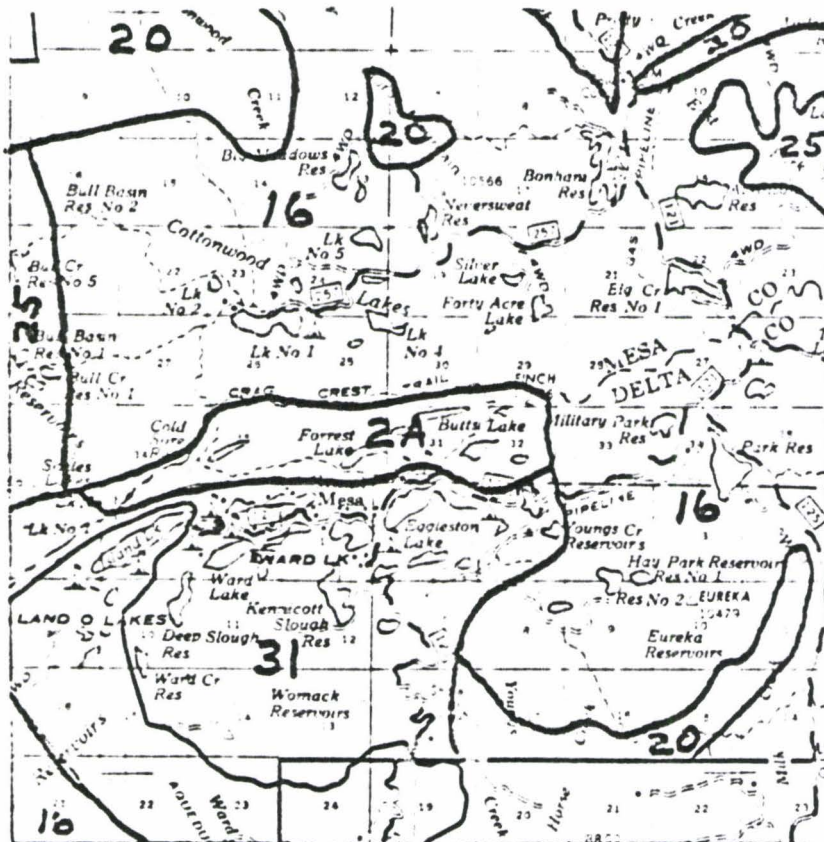
05 Permit undesignated sites in Friswell condition class 1 through 3 where unrestricted camping is permitted.

(0174) (06C)

06 Prohibit motorized vehicle use off of Forest System roads and trails in alpine, brumholz, mountain grass, and mountain shrub.

(0154) (06C)

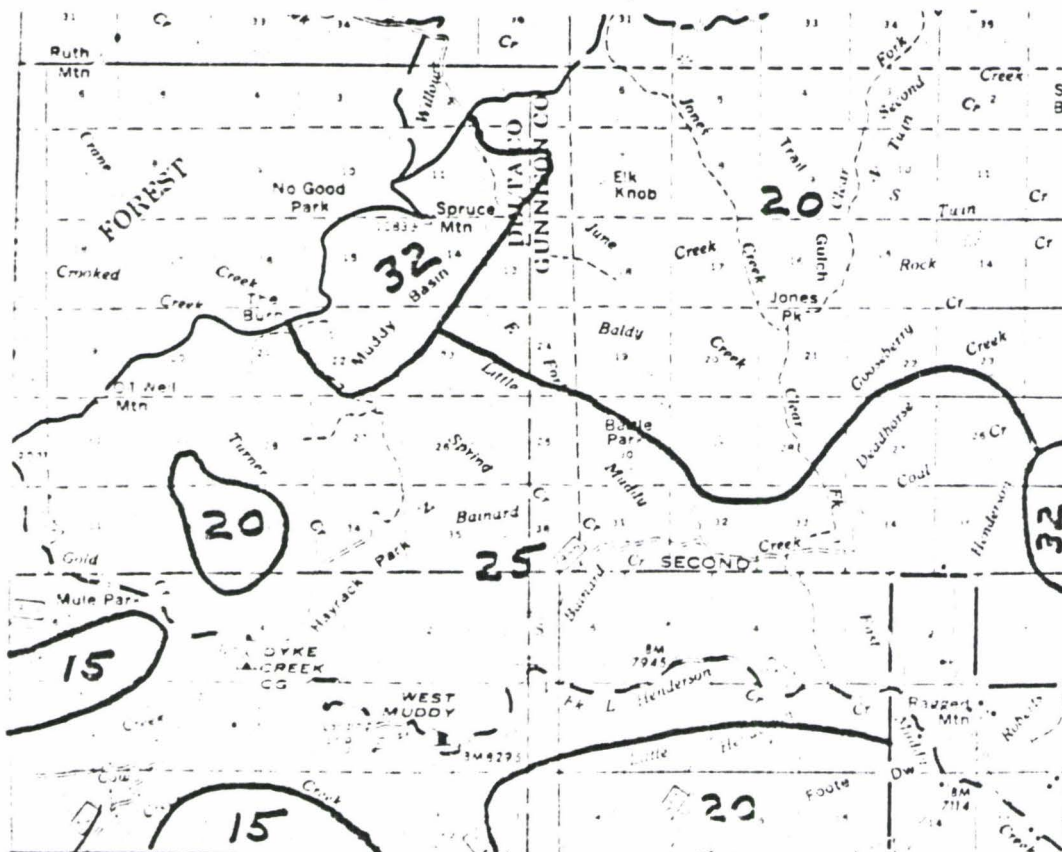
Figure 8 Map - Grand Mesa



MANAGEMENT
EMPHASIS

- 2A Semi-Primitive
Motorized Recreation
- 16 Timber (Shelterwood)
- 20 Range-Intensive
- 25 Range-Extensive
- 31 Rural and Roaded
Natural Recreation

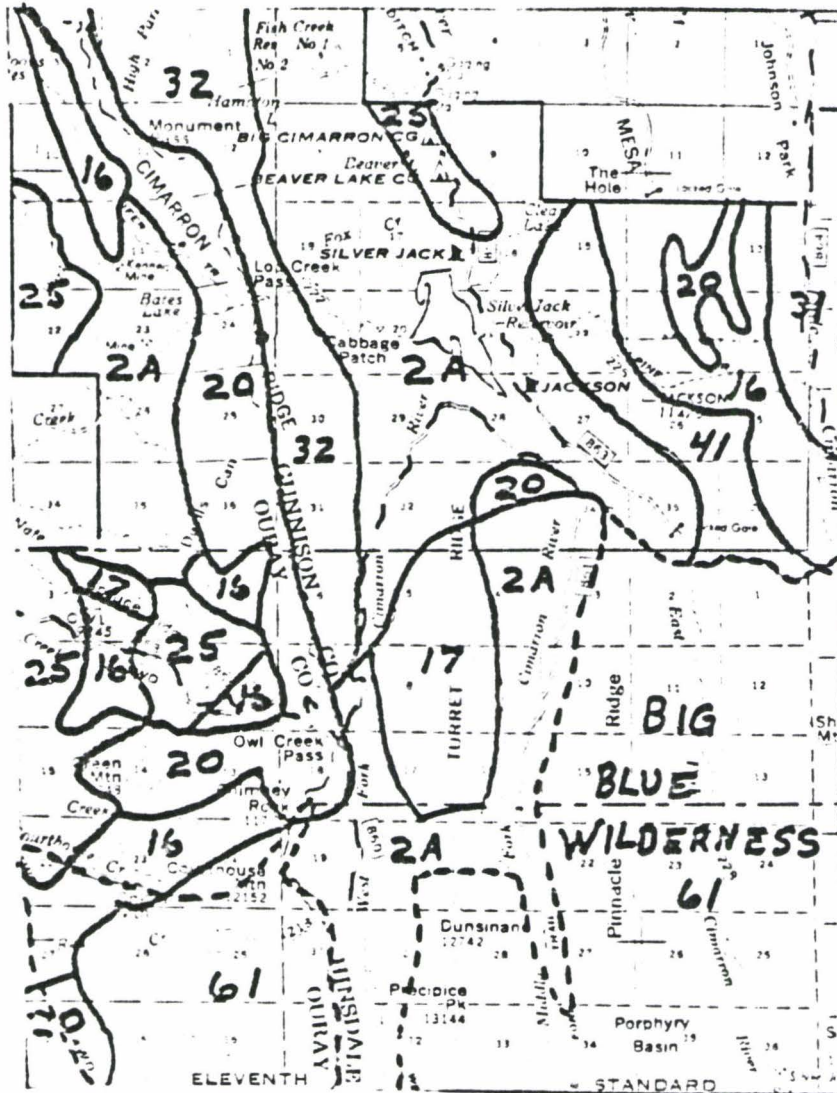
Figure 9 Map - Muddy Creek



MANAGEMENT
EMPHASIS

- 15 Timber (Clearcut)
- 20 Range-Intensive
- 25 Range-Extensive
- 32 Semi-Primitive
Non-Motorized
Recreation

Figure 10 Map - Cimarron



MANAGEMENT
EMPHASIS

- 2A Semi-Primitive Motorized Recreation
- 16 Timber - Shelterwood
- 17 Timber - Shelterwood
- 20 Range - Intensive
- 25 Range - Extensive
- 31 Rural and Roaded Natural Recreation
- 32 Semi-Primitive Non-Motorized Recreation
- 41 Wildlife - Intensive
- 61 Wilderness Semi-Primitive

--- WILDERNESS BOUNDARY

3. CAPACITIES

Capacities are developed in the planning process but they should not be used as hard figures for controlling people. This should be done through monitoring and evaluation actions.

Capacities are useful in setting priorities for management actions. They can show where surplus facilities are being provided. They also can help set program or development priorities where use is approaching capacities.

Figure 3 shows the present use as compared to capacity for each ROS Class to be:

P	67%
SPNM	60%
SPM	83%
RN	24%
R&U	62%

This indicates the SPM opportunities are in the shortest supply and there is a surplus of RN opportunities. Management efforts should be taken to move some of the RN areas to SPM to bring these more in balance. The P and SPNM areas need to be protected and monitored closely since these opportunities cannot be reproduced elsewhere.

The above also should be considered when making travel management decisions. From an engineering standpoint it is desirable to close roads where travel is light and when budgets are reduced. However, from a recreation management standpoint, closures in SPM areas would aggravate the situation by moving the capacity even closer to the current use level. Closures in RN areas would have much less effect on the recreation opportunities provided since there is a surplus in this ROS class.

4. MANAGEMENT STANDARDS

Management prescriptions are further defined by work standards. They give additional performance standards and guidelines on how to meet the standards. These are now written in the developed site/dispersed area context. The standards are written for the minimum acceptable level of performance as well as for RSM and FSM. Developed site and dispersed area Regional Acceptance Work Standards are shown in Figures 11 and 12.

Figure 11 - REGIONAL ACCEPTABLE WORK
STANDARDS

DEVELOPED RECREATION

RECREATION

REGIONAL ACCEPTABLE WORK STANDARD

Activity Description and Standard	MFL Code	
	No.	Unit of Measure
<u>DEVELOPED RECREATION SITE MANAGEMENT</u>	All A13	PAOT-Days
Sites which cannot be maintained to the following standards will be closed to public use.		
A. <u>Cleanup</u> . During managed use season, site cleanup will be done only on the following schedule:		
less than 30 percent occupancy rate - once every 7 days.		
30 percent to 70 percent occupancy rate - once every 4 days.		
70 percent to 100 percent occupancy rate - every 2 days.		
1. Toilets.		
a. Toilet bowls, risers, seats, seat covers, and urinals free of deposits on surfaces.		
b. Building interiors free of dirt, trash, graffiti, insects (dead and alive) and spider webs.		
c. Toilet paper stocked to last until next cleaning.		
d. Walkways and trails clear of obstructions.		
e. Exterior walls free of graffiti.		
f. Eaves free of wasp nests and spider webs.		
g. Vaults pumped only when approximately three-fourths full.		
2. Tables.		
a. Tops and seats free of particles of dirt, grease, and food.		
b. Under portion free of spider webs.		
3. Fireplaces, char-grills, fire rings, and stoves.		
Empty ashes only when approximately half-full.		
4. Garbage cans and depositories.		
Empty only when at least half-full.		
5. Hand-pumps, fountains, and hydrants.		
All units free of particles of food, dirt, and grease.		
Water tests meet applicable standards, or system is made inoperable.		
6. Grounds.		
a. Remove obvious trash, bottles, cans, glass, and litter.		
b. Eliminate hazards which are a threat to user safety.		
B. <u>Maintenance</u>		
1. Facilities will be maintained at condition class 2.		
2. Provide and maintain only those signs, posters, and bulletin boards needed for regulation, health, safety, entrance, and BCCF collections.		

Figure 12 - REGIONAL ACCEPTABLE WORK STANDARDS

DISPERSED RECREATION

RECREATION

REGIONAL ACCEPTABLE WORK STANDARD

Activity Description and Standard	MII Code	
	No.	Unit of Measure
<u>DISPERSED RECREATION MANAGEMENT</u>		
A. <u>Administration</u>	350	Acres
Monitor operations and activities for conformance with the Recreation Opportunity Spectrum and Management Area Prescription:	355	Acres
a. More than 1000 visits per season - once monthly during the season of use.		
b. Less than 1000 visits per season - once during peak use season.		
B. <u>Operations</u>		
1. Establish voluntary registration at a representative set of trailhead and ORV access points which receive 500 visits or more per season, to achieve a reliability level 4 (RIM FSH 2309.11).	351	Acres
	356	Acres
2. Sites and travel routes will be kept free of obvious litter.		
3. Manage campsites in Frissell Condition Classes 1, 2, or 3.		
4. Close and/or rehabilitate sites in Frissell Condition Classes 4 and 5.		
5. Provide and maintain only those signs needed for public health and safety.		
C. <u>Maintenance of Dispersal Recreation Facilities</u>		
1. Maintain facilities in dispersal recreation areas to RIM Condition Class 2.	352	Acres
2. Close, rehabilitate, or remove facilities in RIM Condition Classes 4 and 5.	357	Acres

Recreation opportunity objectives may indicate different management actions in different ROS classes. But the work standards can still be applied to the ROS areas as appropriate. However it would be helpful to rewrite the work standards using the ROS classes. It would also be better to describe the standards in terms of objectives desired rather than the how-to specifics now included.

5. MONITORING AND EVALUATION

The Forest Plan will also contain a monitoring action plan. This is to monitor planning assumptions and direction. Figure 13 shows the monitoring actions relating to recreation use.

Figure 13 - Monitoring Actions Relating to Recreation

MONITORING REQUIREMENTS							
Activity, Practice, Effect or Resource to be Measured	Data Sources Monitoring Techniques	Annual Cost (Yr 5 Years)	Expected Precision	Expected Reliability	Frequency of Measurements	Reporting Period	Variability Which Would Initiate Further Evaluation
ACHIEVING OBJECTIVES OF FOREST PLAN							
Prescription application to Management Areas	Data Sources: -Prescriptions -District, S.O. records -Work Plans Management Area Monitoring techniques: -Program Reviews -General Management review	\$5,000	High	Moderate	Based on need found in resources and activity monitoring and evaluation. Estimated, District per year	Annually	Any significant deviation from the Prescriptions as judged by the Review Team.
RECREATION							
Developed Site Use	*BIN Use and Double Sampling	\$8,000	Moderate	Moderate	Continuous Sampling throughout use period.	Annually	Less than 1% use or more than 50% use of a site annually over a 3 year period.
Developed Site Condition	BIN Facility Condition and Routine Inspections	\$5,000	High	High	Continuous	Annually	Facility Condition below BIN Condition Class 2.
Dispersed Area Use and Experience Level	BIN Use by Sampling methods including Road and Trail traffic counters.	\$6,000	Moderate	Moderate	Continuous	Annually	When use is 10% 2, the SOI Social Setting Criteria for the BIN Class annually over a 3 year period.
Off-Road Vehicle Damage	Area Reviews	\$4,000	Moderate	Moderate	20% Sample Annually of off-Road vehicle use areas	Annually	Use conflicts with Management goals for management area; lowering of VMD; unacceptable resource damage.
Dispersed Campsite Condition	Frisvalla site inspection.	\$7,500	High	High	20% Sample Annually of heavy use areas.	Annually	Sites in facility condition class 5 will be closed and rehabilitated.
Trail Condition	Project Trail Inspections	\$8,000	High	High	20% Sample Annually of Forest trail mileage.	Annually	Departure from Regional Acceptable Standards
*Recreation Information Management							
VISUAL QUALITY							
Monitor compliance of VMD on project or activity basis.	Field and office review Timber sales, special use permits, range improvements, and other vegetative disturbing projects	\$5,000	Moderate	Moderate	25% Sample Annually of District work plans.	Annually	Failure to meet intended Visual Quality Objective of Management Area.
CULTURAL RESOURCES							
Project Compliance with Forest Management Requirements on ground disturbing projects.	Cultural Resource Professional field evaluation of 1 or 2 randomly selected projects.	\$2,000	High	Moderate-High	Annually	Annually	Cultural Resource Properties being damaged/destroyed directly/indirectly by project activities.
Protection of significant Cultural Resource Properties.	Field Condition Evaluation of significant Cultural Resource Properties, use of base year photography and records.	\$6,000	High	High	Bi-annual, during 3rd and 4th quarters of fiscal year	Annual and as needed	Cultural Resource Properties being damaged/destroyed by unauthorized uses and/or controllable natural agents.
WILDERNESS							
Condition of use areas.	Frisvalla site inspection.	\$6,000	High	High	10% Annually	Annually	When 20% of Frisvalla site inspections are found to be degraded one class from the previous year.
Recreation Wilderness Use-amount and distribution.	BIN Use Source Documents, ter 1 registrations, comments.	\$5,000	Moderate	High	Annually	Annually	Regional Acceptable Work Standards, Prescription Management goals.

Monitoring is also used to keep impacts within "limits of acceptable change". Since many of the impacts are centered at campsites, the priorities for monitoring actions are here. In developed sites, the facilities can be monitored using RIM condition classes but some other method needs to be used to monitor vegetative condition and soil impacts (compaction, erosion). The Frissel condition classes could be adopted to this use.

In dispersed areas, the camping spots can be inventoried using Code-A-Site and the impacts monitored using Frissell condition classes. In the Primitive and Semi-Primitive ROS classes, social impacts (number of camping groups or numbers of encounters) may also need to be monitored. Trail and road impacts should also be considered when monitoring. A possible monitoring action plan for a portion of the Forest follows:

Figure 14 - Possible Monitoring Action Plan for Collbran Unit Reservoirs

Monitoring Action Plan
Collbran Unit Reservoirs
Grand Mesa National Forest

<u>Camping Area</u>	<u># Campsites</u>	<u>Current Condition</u>	<u>Monitoring Schedule</u>					<u>Other Action</u>
			<u>82</u>	<u>83</u>	<u>84</u>	<u>85</u>	<u>86</u>	
Atkinson	4	2	X					
Big Creek #1	130PAOT+	1 & 2	X					
	2	4	X					Rehab 2 Camps FY 82
Bonham	55PAOT+	1 & 2		X				
	4	2 & 3		X				
Forty Acres	1	2		X				
Lambert	2	1	X					
Silver Lake	2	2 & 3		X				
Big Meadows	3	3 & 4				X		Rehab 1 Camp FY 85
Blackman	1	2				X		
Cottonwood #1	210PAOT+	1 & 2			X			
	3	3 & 4			X			Rehab 2 Camps FY84
Cottonwood #2	3	1 & 2					X	
Cottonwood #4	4	2 & 3					X	
Cottonwood #5	2	2					X	
Currier	1	3				X		
De Camp	1	2					X	
Little Meadows	2	2				X		
Neversweat	3	3 & 4				X		Rehab 1 Camp FY 85
Kitson	1	3			X			

Results of this monitoring will be used to:

1. Devise on-site management actions to keep within limits of acceptable change.
2. Develop information procedures to disperse use and reduce impacts.
3. Redistribute or restrict use to reduce impacts within limits of acceptable change.
4. Include results in program and budgeting actions.

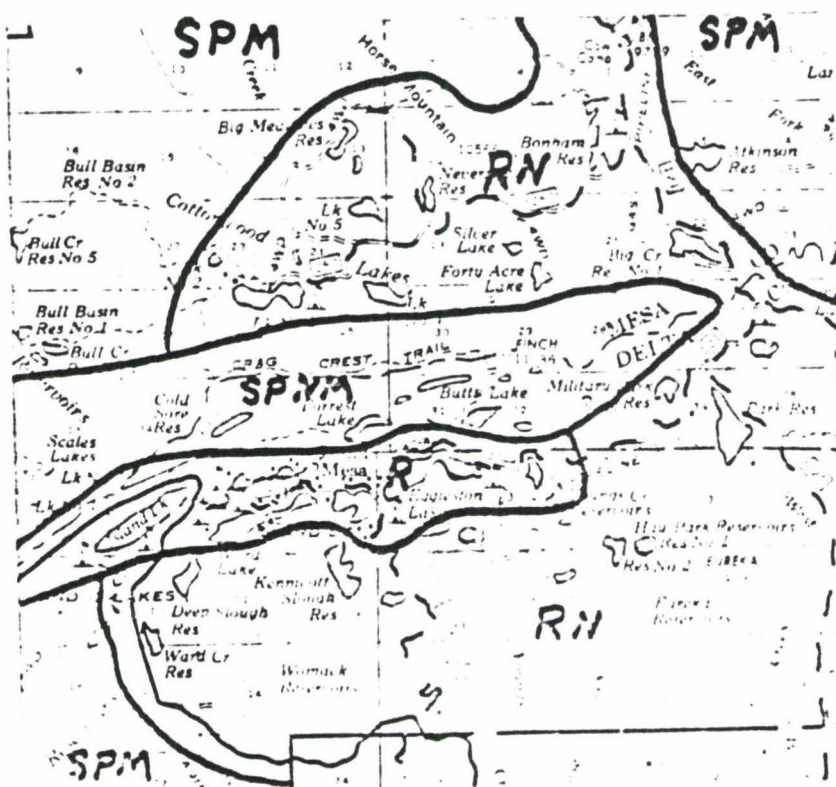
5. EVALUATING CONSEQUENCES OF MANAGEMENT ACTIONS

ROS concepts are also useful in evaluating management actions. Some of these actions involve recreation projects. Projects for other resource purposes also affect recreation.

1. Grand Mesa - Collbran Project

On the Grand Mesa the Highway 65 corridor and associated lake recreation is managed for the rural recreation opportunity. Lakes accessed by gravel roads offer a roaded natural opportunity and lakes accessed only by trails and primitive roads are managed for a semi-primitive motorized opportunity. (See Figure 15).

Figure 15 - Map of Portion of Grand Mesa National Forest



The Bureau of Reclamation operates 17 reservoirs on the Mesa in what is called the Collbran Project. The primary purpose of the Collbran Project is for irrigation and some electrical generation.

The Bureau is reconstructing several dams to meet safety requirements. As part of the reconstruction project, in coordination with the Forest Service, recreation development needs are being identified. The potential impacts can be illustrated as shown in Figure 16.

Figure 16 - Current and Planned Access and ROS Class for Collbran Unit - Grand Mesa

<u>Reservoir</u>	<u>Present Access</u>	<u>FLMP Dir.</u>	<u>Current ROS</u>	<u>Changes In Access</u>	<u>Proposed ROS</u>
Atkinson	Prim. Rd.	Timber	SPM	Improve. Rd.	RN
Big Creek #1	Grav. Rd.	Prescrip.	RN	No Change	RN
Bonham	Grav. Rd.	#16	RN	Consolidate	RN
Forty Acres	Prim. Rd.	"	RN	No Change	RN
Lambert	Prim. Rd.	"	SPM	No Change	SPM
Silver Lake	Prim. Rd.	"	RN	Improve Rd.	RN
Big Meadows	Prim. Rd.	"	RN	Restrict	RN
Blackman	Prim. Rd.	"	SPM	Improve Rd.	RN
Cottonwood #1	Grav. Rd.	"	RN	No Change	RN
Cottonwood #2	Prim Rd & Tr	"	RN	No Change	RN
Cottonwood #4	Prim Rd.	"	RN	Restrict	RN
Cottonwood #5	Prim Rd.	"	RN	Improve Rd.	RN
Currier	Prim Rd.	"	SPM	Improve Rd.	RN
De Camp	Grav. Rd.	"	RN	No Change	RN
Little Meadows	Trail	"	RN	No Change	RN
Neversweat	Grav. Rd.	"	RN	No Change	RN
Kitson	Grav. Rd.	"	RN	No Change	RN

The possible effects of this project on the recreation opportunities provided can be described by the following opportunity setting factors:

ACCESS - Six of the reservoirs are now accessed by gravelled roads, ten by primitive roads and one by trail. The trails are open to motorized use. In wet weather, the primitive roads and trails become impassible.

The reservoir project will improve the primitive roads to five reservoirs. The recreation opportunity could be changed by this project from semi-primitive motorized to roaded natural at three reservoirs. As shown on Figure 3, the semi-primitive motorized opportunity is the most scarce and the roaded natural opportunity the most abundant.

Timber harvest could also change the access to these reservoirs. The same transportation system will be used but it will require additional improvement.

Other Non-Recreation Resource Uses

Water Storage - The reservoirs already exist but need repair and/or reconstruction. There will be short-term impacts on the recreation experience while this work is being accomplished and while the reservoirs are drawn down. Adding conservation pools will benefit the fishery and the recreation experience. Normal operation and maintenance of these reservoirs will have little effect on the recreation opportunity.

Timber - Timber harvest activities will also have short-term effects on recreation. Some closures and restrictions will be needed while logging is occurring. Visual quality objectives will be maintained after harvest. Long-term effects will be minimal, except for the effects of improved access.

On-Site Management - There is now very little on-site management evident. No facilities are present except for campgrounds at Cottonwood #1, Big Creek and Bonham Reservoirs. There is little traffic control or sanitation facilities. Except for the campgrounds, a pack-it-out policy exists for cleanup.

The project would provide parking areas at each fishable reservoir and sanitation facilities as needed. No other facilities are proposed. Some additional travel restrictions will be imposed such as closing travel across dams and spillways and around some lakes.

Social Interaction - The heaviest use is fishing during the summer and hunting in the fall. Winter snowmobile use is quite heavy but the project area is too far from plowed roads for cross-country skiing. User conflicts are minimal now. Improved access will increase user pressure for both hunting and fishing and increased encounters and conflicts will occur. The recreation opportunity will also be adversely affected, for a short-term, during reservoir reconstruction and timber harvest.

Acceptability of Visitor Impacts - Recreation use at some of the reservoirs has caused resource damage. An estimated 30% of the campsites are now in Frissell Condition Class IV or V. Sanitation problems exist at these same sites. Some resource damage is also occurring from wet-weather use of the primitive roads. In some places, multiple-roads exist in bog areas and across meadows.

Containing the vehicles at designated parking areas and constructing sanitation facilities will aid in restoring these sites. Improving the roads and relocating them to avoid wet spots and meadows should also correct the resource problems on the roads.

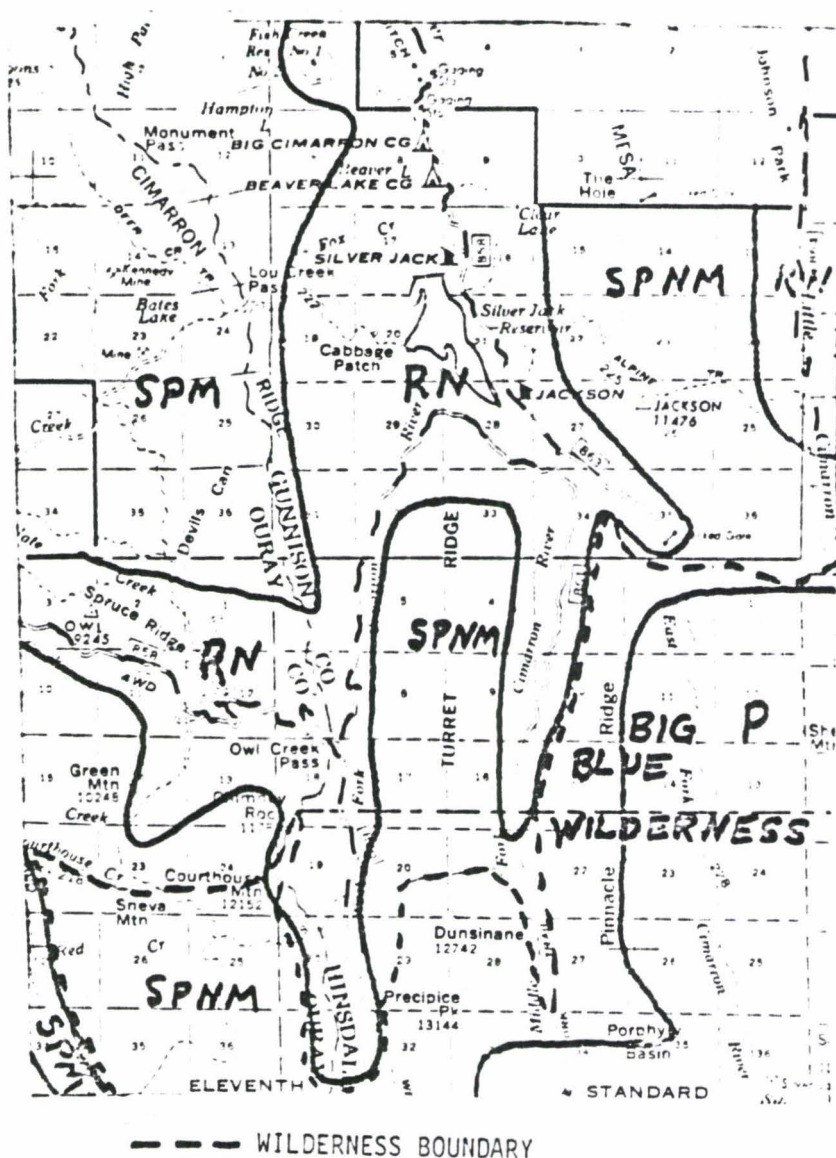
Acceptable Level of Regimentation - Little or no regimentation of use exists now except in the campgrounds. There will be additional travel restrictions across dams and controlling parking at designated areas with this project. There will also be some temporary closures during construction and logging operations.

The primary effect of the project on recreation will be a possible loss of semi-primitive motorized opportunity setting from the improved access. It is hoped this can be mitigated by allowing operations only during the dry season and allowing only minimal road improvement with no surfacing. The semi-primitive motorized recreation opportunity would then be retained. This assumption needs to be carefully monitored. If desired results are not achieved additional measures need to be taken to keep the SPM setting.

2. Cimarron River

Another example is in the Cimarron River on the Uncompahgre National Forest presently accessed by a gravel road. In the mid-1970's, Silver Jack Reservoir was created as an irrigation project. As a mitigating measure for this project, recreation developments of one million dollars were approved. The area is currently managed for roaded natural recreation opportunities along the river bottom. The upper portions of the drainage, in and adjacent to the Big Blue Wilderness, are managed for semi-primitive, nonmotorized and primitive opportunities (see Figure 17).

Figure 17 - Map of Cimarron River Portion of Uncompahgre National Forest



The lower river bottom and some additional pockets are allocated for range emphasis (20 and 25) in the Forest Plan. Some timber is programmed between the Middle Fork and the West Fork. The remainder of the area is allocated to the general prescription with no special emphasis.

Two small campgrounds presently exist -- at Beaver Lake and below at Big Cimarron. A 325 PAOT campground is being constructed at Silver Jack Reservoir. Facilities include paved roads, tables, toilets, interpretative signs, etc. The facility is the kind that would be expected in a rural setting. Effects on the recreation opportunity include:

Access - A gravel road exists up the Cimarron River and over Owl Creek Pass. This is a popular recreation loop drive and is appropriate in the rural natural setting. The roads off this loop to wilderness access points are minimal standard and unsurfaced. They effectively make the transition to the semi-primitive setting.

No changes in access roads or standards are proposed, except for those needed for timber harvest.

Other Non-Recreation Resource Uses

Water Storage - Silver Jack Reservoir was constructed for irrigation. There is a large draw-down during the recreation season and by late summer, wide mud flats result. This detracts from the recreation use of the reservoir.

Range - Cattle graze the entire drainage. Conflicts exist between the range use and recreation use, especially at campsites. This is being mitigated by construction of fences around the campgrounds.

Timber - Timber harvest is proposed in a portion of the area managed for semi-primitive, non-motorized recreation opportunities. This is on timbered hillsides with no destination areas for recreationists. This area receives little recreation use now, primarily hunters in the fall.

When the timber projects are proposed, a decision will have to be made to either close the roads after harvest to retain the SPNM experience or to allow the area to convert to a semi-primitive motorized opportunity. There is good rationale for either action. The roads should be a minimum standard in either case.

On-Site Management - Use and vehicles will be managed at the three campgrounds. They are all set up for fee collection and can be managed to the full-service standard. Campground hosts are utilized at these sites.

Travel is restricted to roads in the remainder of the area. No other on-site management is proposed.

Social Interaction - Few conflicts occur in the area now. The Owl Creek loop is a popular recreation drive and timber hauling could conflict with this activity. This can be partially mitigated by restricting hauling to weekdays. The wilderness users pass through the area to the access points with little conflict.

Conflicts between users at the campgrounds sometimes occur, especially at Beaver Lake. This is a popular party area for local groups and also a destination area for regional recreationists. The two user groups do not mix well. The campground host helps alleviate this problem somewhat.

Acceptability of Visitor Impacts - Some adverse impacts exist at Beaver Lake but these can be corrected with minimal effort. The main impact is from dispersed camping on up the drainage. Many of these camping areas are in Frissell Class IV and V. It was hoped that the Silver Jack facilities would relieve this condition but this is a completely different recreation opportunity setting. Current thinking is that use at Silver Jack will simply be added on top of what would have occurred otherwise. Some of the problem is caused by long-term use where trailers and camps are left all summer or all fall for the 3 hunting seasons. Actions needed to correct this situation are:

1. Impose a 14-day stay limit.
2. Control vehicles to designated areas by construction of barriers.
3. Rehabilitate campsites where vegetation has been lost.

Acceptable Level of Regimentation - Vehicle traffic is restricted to established roads. This is a necessary resource protection measure and generally well accepted. Additional restriction and barriers need to be carefully implemented so as to not create an idea of over-regimentation.

The regimentation in the campgrounds is appropriate and expected.

No public vehicle access is provided down to Silver Jack Reservoir. In addition, a special closure has been in effect that prevents any boats on the reservoir. This is because of the large mud flats when the reservoir is drawn down and because of the danger from the glory hole spillway when the lake is full. Also there is no room for parking except on the dam itself. This is more regimentation than is necessary and it prevents utilizing the recreation potential of the reservoir. The recreation users should be able to choose whether or not they want to go on the mud flats. The glory-hole is obvious to all, and is isolated from the rest of the lake by buoys. Proposed actions are to:

1. Restrict use only to hand-propelled boats. These can be packed down from the campground.
2. If necessary, construct a protector around the glory-hole.
3. Persue the possibility of parking vehicles on the dam. No trailers could be allowed and no boat ramp would be provided.

The decision is to manage Silver Jack Campground for a rural recreation opportunity, recognizing this is an inconsistency with the rest of the area. At some future date, if more rural opportunities were needed, the drainage and Owl Creek loop could be developed to a rural opportunity setting.

In retrospect, a better decision for mitigation of Silver Jack might have been to develop several facilities conforming to a semi-primitive motorized or a roaded natural opportunity. This would be more compatible with the upper drainage semi-primitive and primitive settings.

Some actions, completely separate from recreation, can have a profound effect on recreation opportunities. An example is in Muddy Creek on the Gunnison National Forest. One gravel road accesses the area but most of the area is managed for semi-primitive motorized and non-motorized opportunities. The primary use is hunting, having possibly the best big-game hunting in the United States. Established outfitters operate within the area. The Forest Plan allocates the area for grazing emphasis which is compatible with the semi-primitive recreation opportunity (see Figure 18).

[illegible]

Oil and gas explorations have proven a significant gas reserve exists in the area and plans are being drafted for development of this field. The gas is in small-pore Mancos Shale which will require wells drilled on a ½-mile grid. Development will include roads to each well, collection and distribution lines and pumping plants. Resource impacts, in addition to recreation, include the big game herds, water and soil, forage and timber.

From the recreation management standpoint, the concerns can be summarized as follows:

Access - The transportation system needed for gas development will drastically alter the access situation. Arterial and main collector roads will be double-laned and possibly paved. Local roads will go to every quarter section. They will be a minimum standard but will be graveled for all-weather use.

The SPNM and SPM opportunities could be changed to RN due to the extensive road system. There is already a surplus of roaded natural opportunities and a shortage of SPNM and SPM opportunities (Figure 3).

Every possible effort should be made to retain as much of the semi-primitive motorized opportunity as possible. This can be done by keeping road standards to the minimum, using surfacing only where essential, and carefully locating the roads for minimum impact. Travel management restrictions and closures can also aid in retaining the semi-primitive opportunity.

After the field is depleted, rehabilitation measures should obliterate the roads where possible. This would reinstate the semi-primitive, non-motorized opportunities in some areas and restore a semi-primitive motorized opportunity to the remainder of the area.

Other Non-Recreation Resource Uses

Range - The transportation system will also offset cattle distribution and handling. Additional losses could be expected.

Wildlife - The area now is habitat for a major elk herd. The improved access and increased activity will have profound effect on this elk herd. This in turn, will affect the recreation opportunity since the major recreation activity is hunting. Mitigation measures will be difficult to design.

Soil and Water - The area has a high geologic hazard rating and the soils are highly erodable. Natural erosion moves many tons of soil and keeps the streams muddy - hence the name Muddy Creek. Development activities must be carefully designed to keep from accelerating this erosion.

On-Site Management - Travel is restricted to existing roads. No facilities or other management actions are evident.

One gated road closure was instituted last hunting season on a newly constructed gas well road. This was to preserve existing hunting opportunities and the semi-primitive setting.

Social Interaction - Most use occurs during the hunting seasons. Hunting pressure is heavy and conflicts occur at the accessible camping areas, along the roads when they are slippery and in the most popular hunting spots. Increased access will only increase the pressure and the conflicts - at least as long as the elk herd can be maintained. Seasonal road closures may be necessary to protect the elk herd and to provide a semi-primitive hunting experience.

Acceptability of Visitor Impacts - The current road restrictions are generally followed except during hunting season. Then cross country travel becomes prevalent. Resource damage is accentuated because the soil is generally saturated and becomes easily rutted. Parallel roading is common in boggy and steep spots. Closures are ineffective because of the open nature of much of the area.

An important element in the location and design of the new road system must be to include effective closure devices and measures for containing vehicles on the roads.

Acceptable Level of Regimentation - Gates and road closures are not popular with hunters. If a road exists they want to use it. Heavy regimentation and strong enforcement of closures are not desirable in a semi-primitive setting. To reduce this conflict, actions should:

1. Implement only those closures needed to keep resource damage and changes to an acceptable limit and to meet recreation opportunity and other resource objectives.
2. Where possible, use actions other than gates for closures, i.e. obliterate road, remove culverts and bridges, etc.
3. Tell hunters the reasons for the closures through news releases, brochures, signs and contacts and solicit their support.

The management challenge in this instance is to work with the mineral industry to minimize roading and development to the least amount possible. The recreation goal is to protect as much semi-primitive opportunity as possible and to restore these opportunities when the gas field is depleted.

C. PROGRAM DEVELOPMENT AND BUDGETING

The recommended program for the Grand Mesa, Uncompahgre and Gunnison National Forest can be displayed by ROS Class as shown of the following pages (See Appendix D for calculations).

The recommended program meets either full-service or reduced service management direction. Cost effectiveness and returns to the treasury are considered. Monitoring and current rehabilitation are included but the backlog is deferred except where its effect is considered a long-term resource problem.

Management Standards to be Met:

<u>ROS Class</u>	<u>Area</u>	<u>Public Fac.</u>	<u>Pvt. Fac.</u>	<u>Rehab.</u>	<u>Backlog</u>
P	FSM	---	---	Yes	100%
SPNM	RSM	---	---	Yes	0
SPM	RSM	RSM	RSM	Yes	20%
RN	50% RSM	12% FSM	RSM	Yes	0
	50% Cus. Mgt.	66% RSM			
R&V	RSM	22% Closed FSM	RSM	Yes	20%

<u>ROS Class</u>	<u>M-RVD</u>	<u>Cost M-S</u>	<u>Benefit M-S</u>	<u>B/C Ratio</u>
P	19.9	99.5	216.3	2.2:1
SPNM	190.0	184.4	1,467.1	8.0:1
SPM	554.9	209.0	3,511.0	16.8:1
RN	963.3	249.1	4,922.3	19.8:1
R&V	471.0	166.1	2,066.0	12.4:1
TOTAL	2,199.1	908.1	12,183.3	13.4:1

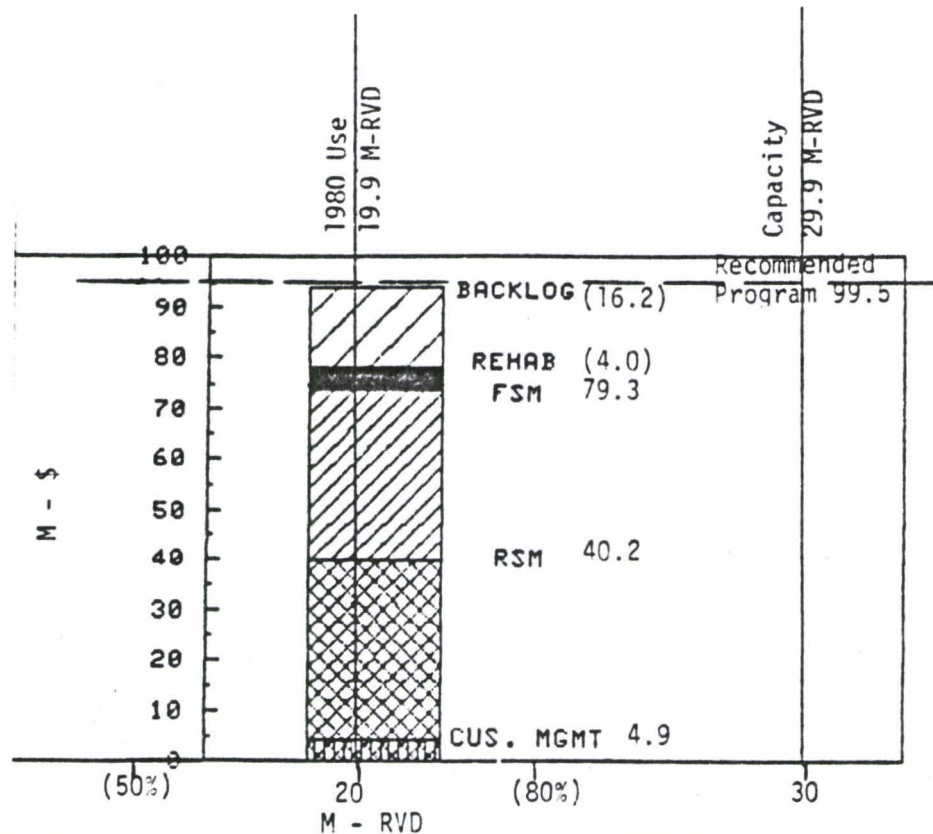
Consequences of Recommended Program

1. Deferred Backlog Remains - Totalling \$284.1M
Assuming cost increase 10% per year, then
Annual cost of deferral = \$284.1M x 1.1 = \$312.5M
2. The program is \$158.1M over the current constrained level of \$750M.

PRIMITIVE ROS CLASS

Area 217.9 M Acres
Use 19.9 M RVD
66.7% Capacity

Recommended Program
Benefits \$216.3M
B/C Ratio 2.2:1
\$ to Treas. \$1.0 M



Greatest B/C ratio with Extensive Management. No change in returns to treasury between standards.

Use-67% of capacity. Some resource impacts are occurring at popular areas.

Resource Needs: Monitor 54 campsites (included in RSM)
Rehab. 4 sites to Frissell class 3 (\$4.0 M)

Backlog: \$16.2 M

Recommended Program:

1. Full Service Management	\$79.3 M
2. Rehab. 4 Campsites	4.0
3. Backlog	16.2
	<u>\$99.5 M</u>

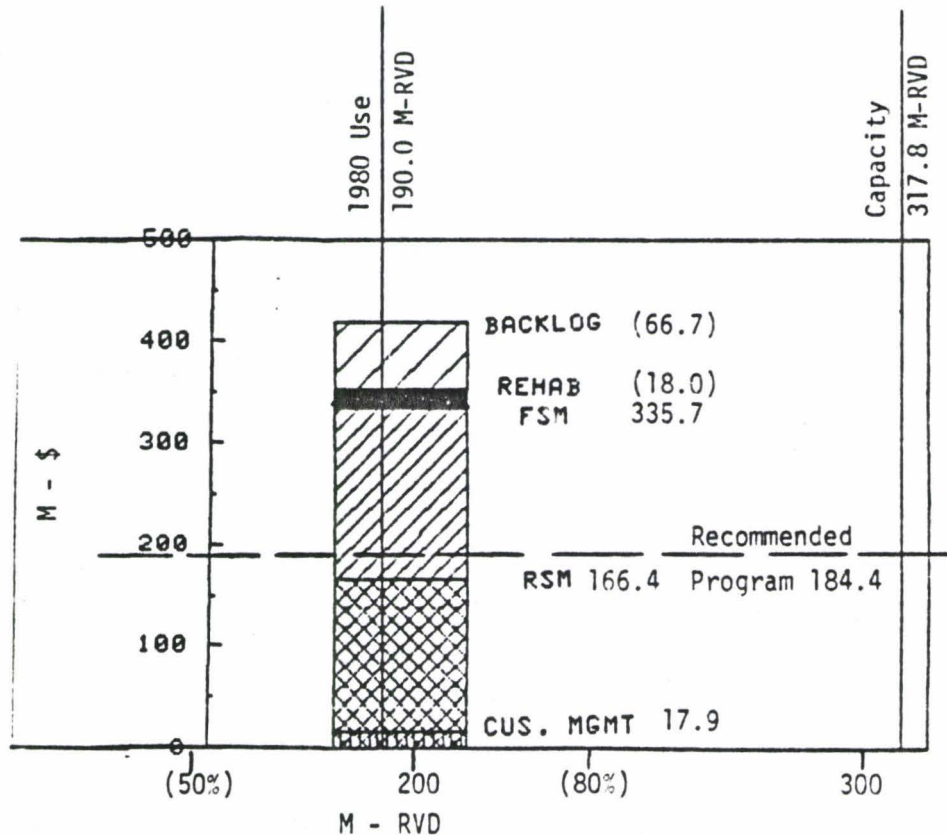
This is a small program and consequences of resource damage are high. This recreation opportunity cannot be reproduced elsewhere. Resource damage is long-term and completion of backlog work is recommended.

SEMI-PRIMITIVE, NON-MOTORIZED ROS CLASS

Area 816.8 M-Acres
Use 190.0 M-RVD
60% Capacity

Recommended Program

Benefits \$1,467.1 M
B/C Ratio 8.0:1
\$ to Treas. \$3.0 M



Greatest B/C ratio with Extensive Management. No change in returns to treasury between standards.

Use is 60% of capacity. Some resource impacts are occurring at popular areas.

Resource Needs: Monitor 306 campsites (included in RSM)
Rehab. 18 sites to Frissell Class 3 (\$18 M)

Backlog: \$66.7 M

Recommended Program

1. Reduced Service Management	\$166.4 M
2. Rehab. 18 Campsites	18.0
	<u>\$184.4 M</u>

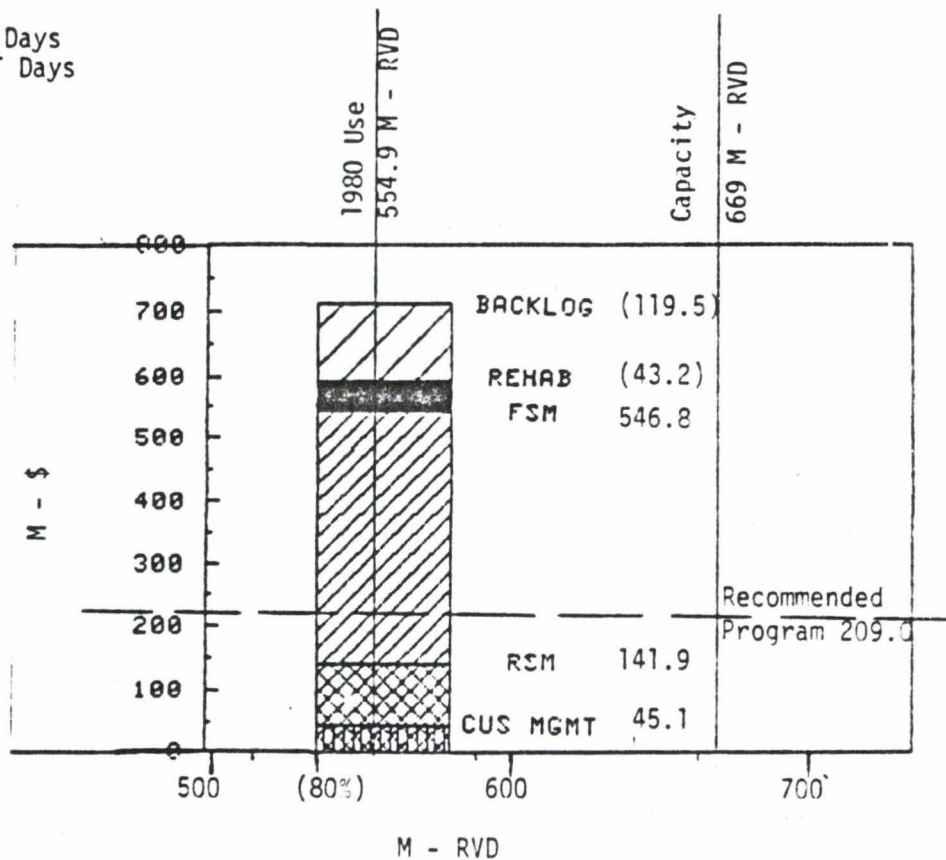
Allows for monitoring and current rehabilitation. Backlog is deferred.

SEMI-PRIMITIVE, MOTORIZED ROS CLASS

Area 1,265.1 M - Acres
 Pub. Fac. 12.8 M - PAOT Days
 Pvt. Fac. 238.0 M - PAOT Days

Use 554.9 M - RVD
 83% Capacity

Recommended Program
 Benefits \$3,511.0 M
 B/C Ratio 16.8:1
 \$ to Treas. \$21.8 M



Greatest B/C ratio is at Extended Management. No change in returns to treasury between standards.

Use (Public Sector)-90% Area & 79% Facilities. Considerable amount of resource impacts occurring.

Resource Needs: Monitor 474 Campsites (included in RSM)
 Rehab. 43 dispersed campsites and 2 developed camps
 to Frissell Class 3 (\$43.2)

Backlog: \$199.5 M

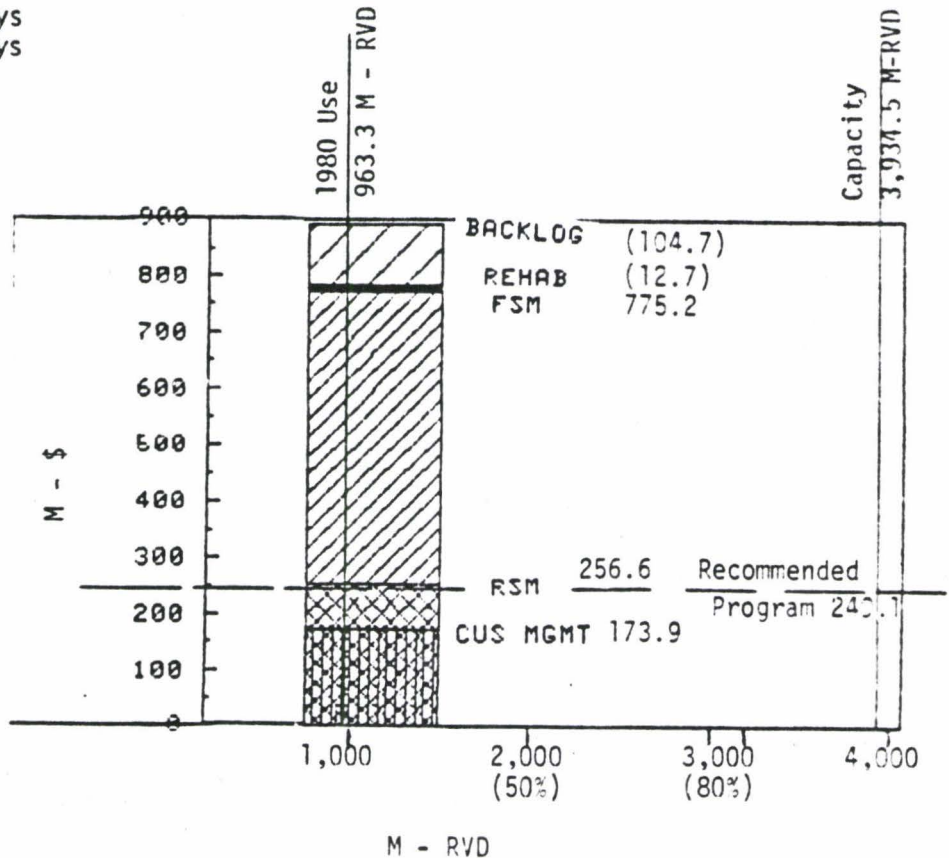
1. Reduced Service Management	\$141.9 M
2. Rehab. 43 dispersed campsites and 2 developed campsites	43.2
3. 20% Backlog	23.9
	<u>\$209.0 M</u>

Allows for monitoring and current rehabilitation 20% of backlog is accomplished because of heavy use level.

ROADED NATURAL ROS CLASS

Area 619.2 M-Acres
 Pub.Fac. 599.3 M-PAOT-Days
 Pvt.Fac. 660.2 M-PAOT-Days

Use 963.3 M-RVD
 25% Capacity



Recommended Program
 Benefits \$4,922.3 M
 B/C Ratio 19.8:1
 \$ to Treas. \$81.1M

Greatest B/C ratio is with both RSM and Extensive Mgt. (They are nearly equal)
 Returns to treasury drop from \$81.1 M to \$40.1 M with RSM in campgrounds (loss of fee collections).

The use (Public Sector) 17% Area & 63% Facilities. Little resource impact to area. Some impacts to popular camp facilities.

Resource Needs: Monitor 387 campsites (included in RSM)
 Rehab. 7 dispersed campsites and 57 developed campsites to Frissell Class 3 (\$12.7 M)

Backlog: \$104.7 M

Roaded Natural

Recommended Program

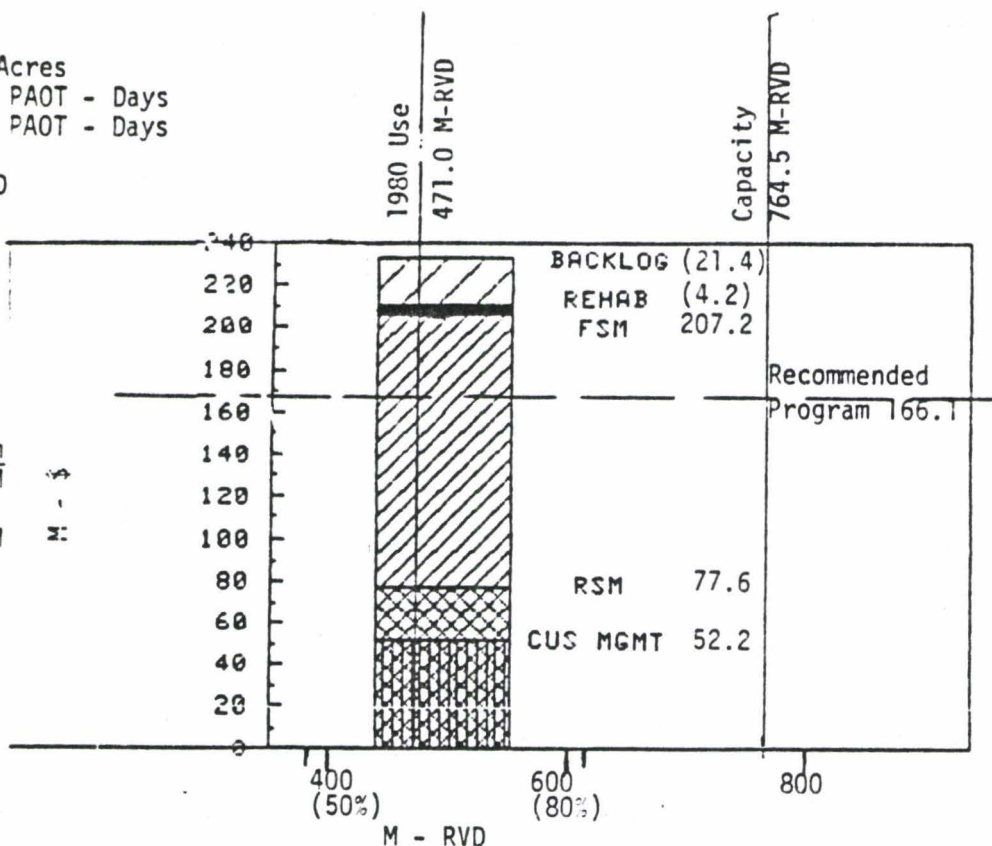
1.	Reduced Service Management	\$256.6 M
2.	Reduce Standard to Cus. Mgt. on 50% of acres due to low use levels	
	310 MAC x \$0.02	-6.2
3.	Class 130 M-PAOT Days of facilities to have use at 80% of capacity	
	130 M x \$0.35	-45.5
4.	Provide FSM for 70 M-PAOT Days to keep fee collections at current level	
	70 M x \$0.45	+31.5
5.	Rehab. 7 Dispersed Campsites and 57 Developed Campsites (allows for current rehabilitation)	+12.7
	Backlog is deferred.	
		<u>\$249.1 M</u>

RURAL & URBAN ROS CLASSES

Area 34.1 M - Acres
 Pub.Fac. 177.8 M - PAOT - Days
 Pvt.Fac. 523.7 M - PAOT - Days

Use 471.0 M - RVD
 62% Capacity

Recommended Program
 Benefits \$2,066.6 M
 B/C Ratio 12.4:1
 S to Treas. \$63.2 M



Greatest B/C ratio Ext. Mgt. (31.1:1) with RSM close (25.7:1).
 Returns to treasury drop from \$63.2 M to \$29.0 M with RSM in campgrounds
 (loss of fee collections)

Use (Public Sector) 51% Area & 81% Facilities. Little is programmed for
 area admin. (\$1.7 M @ RSM). Impacts primarily to facilities.

Resource Needs: Monitor 42 campsites (included in RSM)
 Rehab. 2 Dispersed Campsites and 22 Developed
 Campsites to Frissell Class 3 (\$4.2 M)

Backlog: \$21.4 M

Recommended Program:

- | | |
|--|------------------|
| 1. Reduced Service Management | \$ 77.6 M |
| 2. FSM on public developed sites to allow
for fee collection | |
| 177.8 PAOT-Days x \$0.45 | +80.0 |
| 3. Rehab. 2 Dispersed Campsites and 22 Developed
Campsites (current rehabilitation) | + 4.2 |
| 4. Do 20% of Backlog to assure continued fee
collections | + 4.3 |
| | <u>\$166.1 M</u> |

Full Program

A full program would provide full service management to all ROS Classes, and accomplish current rehabilitation and annual backlog. The full program should not be considered a maximum program. A maximum program would include more construction and increase amounts of backlog accomplished. The full program can be summarized as follows:

<u>ROS Class</u>	<u>M-RVD</u>	<u>Cost M-S *</u>	<u>Benefits M-S</u>	<u>B/C Ratio</u>
P	19.9	99.5	216.3	2.2:1
SPNM	190.0	420.4	1,833.9	4.4:1
SPM	554.9	709.5	4,265.9	6.0:1
RN	963.3	892.6	6,733.1	7.5:1
R&V	471.0	232.8	2,245.1	9.6:1
TOTAL	2,199.1	2,354.8	15,294.3	6.5:1

*Costs include FSM, Rehab. and Backlog

Opportunities with the Full Program

1. Recreation experiences provided as expected.
Recreation opportunities correspond with recreation experiences desired.
2. Management direction and standards fully met (at FSM level).
3. No deferred costs would occur. Monitoring would be accomplished to prevent further site degradation. Current rehabilitation and backlog work would be accomplished.
4. Benefits increase \$3,111.0 over the Recommended Program (25% above the Recommended Program).

Consequences of the Full Program

1. Appropriated costs are increased \$1,446.7 M from the Recommended Program (2.6 times the cost of the Recommended Program).
2. Returns to the treasury would not necessarily increase above the Recommended Program. Change in emphasis could increase the returns.
3. B/C ratio drops to 6.5:1.

Minimum Program

A program with Custodial Management for all ROS Classes can be considered the minimum feasible program and is summarized as follows:

<u>ROS Class</u>	<u>M-RVD</u>	<u>Cost M-\$</u>	<u>Benefit M-\$</u>	<u>B/C Ratio</u>
P	19.9	4.9	108.2	22.1:1
SPNM	190.0	17.9	917.0	51.2:1
SPM	554.9	45.1	2,378.7	52.7:1
RN	963.3	173.9	3,922.2	22.6:1
R&V	471.0	52.2	1,626.0	31.1:1
TOTAL	2,199.1	294.0	8,952.1	30.4:1

Opportunities with the Minimum Program

1. Appropriated costs are reduced \$613.9 M from the Recommended Program.
2. Benefit/Cost Ratio increases to 30.4:1.

Consequences of Minimum Program

1. Benefits drop \$3,231.2 M from the Recommended Program (5 1/4 times the cost reduction).
2. Returns to the treasury reduced \$75.2 M (campground fee collections).
3. Management Direction and Standards not met (Minimum Acceptable Standard RSM).
4. Desired experiences not provided recreationists.
Recreation opportunities provided do not correspond with recreation experiences desired.
5. Monitoring of 1,263 dispersed campsites not accomplished. Without monitoring sites will continue to be degraded.

Estimate 10% will drop below Frissell Class 3

$$10\% \times 1263 = 126 \text{ Camps}$$

Future cost for rehabilitation \$126.3 M (added to backlog).

6. Current rehabilitation will not accomplish:

$$\begin{array}{rcl} 74 \text{ Dispersed Campsites @ } \$1,000 & = & \$74.0 \text{ M} \\ 81 \text{ Developed Campsites @ } \$100 & & 8.1 \text{ M} \\ \hline & & \$82.1 \text{ M} \end{array}$$

Future costs would increase 10% per year (not including inflation).
One year's cost:

$$\$82.1 \text{ M} \times 1.1 = \$90.3 \text{ M}$$

7. Entire \$328.5 M backlog would be deferred. Annual cost of deferral:

$$\$328.5 \text{ M} \times 1.1 = \$361.4 \text{ M}$$

8. Summary on one year's deferred costs:

Unmonitored degradation	\$126.3 M
Deferred rehabilitation	90.3
Deferred backlog	361.4
TOTAL	\$578.0 M

The Current Program can be described as one that maximizes returns to the treasury while remaining within a \$75.0 M constrained level. The Current Program is summarized as follows: (See Appendix G for calculations)

Management Standards to be met:

<u>ROS Class</u>	<u>Area</u>	<u>Pub. Fac.</u>	<u>Pvt. Fac.</u>	<u>Rehab.</u>	<u>Backlog</u>
P	RSM	---	---	None	0
SPNM	.55 RSM	---	---	None	0
	.45 Cus. Mgt.				
SPM	.55 RSM	Cus. Mgt.	RSM	None	0
	.45 Cus. Mgt.				
RN	.55 RSM	.10 FSM			
	.45 Cus. Mgt.	.71 RSM	RSM	None	\$75 M
		.19 Cus. Mgt.			
R&V	.55 RSM	FSM	RSM	None	0
	.45 Cus. Mgt.				

<u>ROS Class</u>	<u>M-RVD</u>	<u>Cost M-S</u>	<u>Benefit M-S</u>	<u>B/C Ratio</u>
P	19.9	44.2	173.0	3.9:1
SPNM	190.0	89.7	1,219.5	13.6:1
SPM	554.9	78.3	2,997.5	38.3:1
RN	963.3	346.2	4,938.1	14.3:1
R&V	471.0	191.6	1,946.2	10.2:1
TOTAL	2,199.1	750.0	11,274.3	15.0:1

Opportunities with the Current Program

1. A savings of \$158.1 M from the Recommended Program is made in appropriated funds.
2. B/C Ratio increases above the Recommended Program by 1.6:1.
3. Returns to the treasury remain the same as the Recommended Program.
4. Management direction and standards (FSM & RSM) are met on developed sites.

Consequences of the Current Program

1. Benefits drop \$909 M from the Recommended Program (5 3/4 times the cost savings).
2. Management direction and standards are not fully met in dispersed areas (45% at Custodial Management level). Impacts of this can be reduced by giving emphasis with RSM at heavy use areas.
3. Desired experiences not fully provided in dispersed areas managed at Custodial Management level.
4. 45% of the necessary monitoring will not be done. Monitoring to be accomplished only at RSM level. 568 sites (1,263 x .45) that should be monitored will not be. Estimate 10% of these sites will drop below Frissell Class 3. Future cost of rehabilitation will be: 568 x 10% x \$1,000 = \$56.8 M. (Added to backlog)

*NOTE: No monitoring is actually being done now but it is included in the RSM standard and needs to be emphasized.

5. Current rehabilitation is not accomplished.

One Year's cost = \$90.3 M.

6. Only \$75 M of \$328.5 M backlog accomplished - \$253.5 M deferred.

Annual cost \$253.5 x 1.1 = \$278.8 M

7. Summary of one year's deferred costs:

Unmonitored degradation	\$56.8 M
Deferred rehabilitation	90.3
Deferred backlog	<u>253.5</u>
	\$400.6 M

Cost Effective Program

A program can be developed, within the \$750 constrained level, that emphasizes benefits and increases the B/C ratio. This program would defer current rehabilitation and backlog work. The program would meet management direction and standards except for the deferred rehabilitation.

Changes from the Recommended Program to get down to the constrained level would be:

Recommended Program	\$908.1 M
1. Defer rehabilitation work	-82.1
2. Defer backlog work	-44.4
3. Reduce public developed sites in RN-ROS Class from FSM to RSM	<u>-31.5</u>
	\$750.1 M

Management Standards to be met:

<u>ROS Class</u>	<u>Area</u>	<u>Public Fac.</u>	<u>Pvt. Fac.</u>	<u>Rehab.</u>	<u>Backlog</u>
P	FSM	---	---	None	0
SPNM	RSM	---	---	None	0
SPM	RSM	RSM	RSM	None	0
RN	.5 RSM	.38 RSM	RSM	None	0
	.5 Ext. Mgt.	.22 Closed			
R&V	RSM	FSM	RSM	None	0

<u>ROS Class</u>	<u>M-RVD</u>	<u>Cost M-\$</u>	<u>Benefit M-\$</u>	<u>B/C Ratio</u>
P	19.9	79.3	216.3	2.7:1
SPNM	190.0	166.4	1,467.1	8.8:1
SPM	554.9	141.9	3,511.0	24.7:1
RN	963.3	204.9	4,900.7	23.9:1
R&V	471.0	157.6	2,066.6	13.1:1
TOTAL	2,199.1	750.1	12,161.7	16.2:1

Opportunities with the Cost Effective Program

- Returns to the treasury would drop \$41.0 M less than the Recommended Program on the Current Program (Savings are 3.8 times the returns lost).
- Current rehabilitation would not be accomplished.

One year's cost \$90.3 M

- Backlog of \$328.5 M would be deferred. Annual cost of deferral:

$328.5 \times 1.1 = \$361.4 \text{ M}$

- Summary of one year's deferred costs:

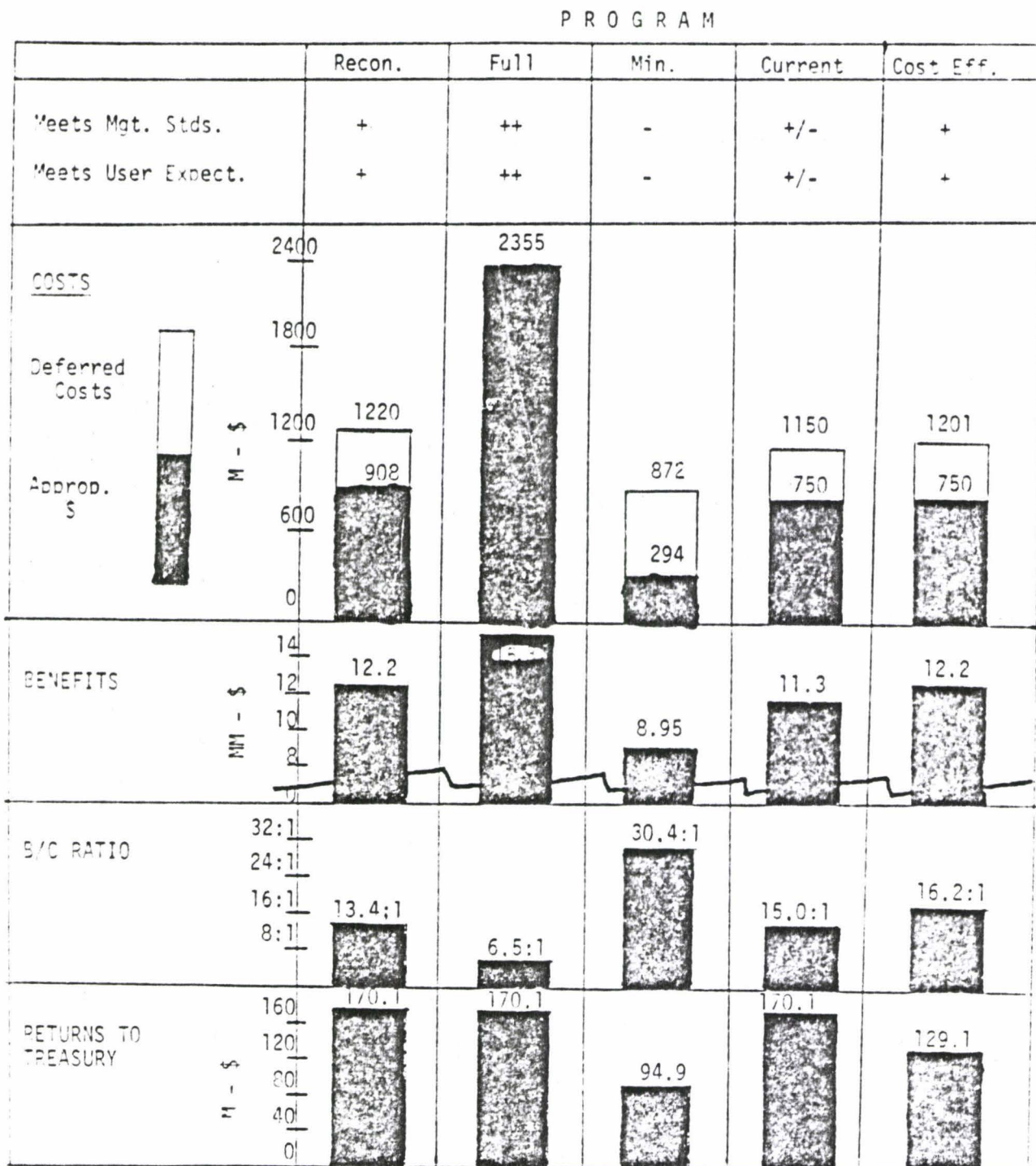
Deferred rehabilitation	\$90.3 M
Deferred backlog	<u>361.4</u>
	\$451.7 M

The programs are compared in the Figures 19 and 20.

Figure 19 - Comparison of Alternative Programs

	Program				
	Recom	Full	Min	Current	Cost Eff.
Meets Mgt. Stds.	Yes	Fully	No	Partially	Yes
Meets User Expect.	Yes	Fully	No	Partially	Yes
Costs (M-\$)					
Appropriated	908.1	2,354.8	294.0	750.0	750.1
Deferred Costs	312.5	0	578.0	400.6	451.7
Total	<u>1,220.6</u>	<u>2,354.8</u>	<u>872.0</u>	<u>1,150.6</u>	<u>1,201.8</u>
Benefits (M-\$)	12,183.3	15,294.3	8,952.1	11,274.3	12,161.7
B/C Ratio (Approp. costs only)	13.4:1	6.5:1	30.4:1	15.0:1	16.2:1
Return to Treasury (M-\$)	170.1	170.1	94.9	170.1	129.1

FIGURE 20 - COMPARISON OF ALTERNATIVE PROGRAMS



Since current programming and budgeting are presented in the developed, dispersed and wilderness categories, ROS programs also need to be expressed in this manner. (See Appendix H for calculations).

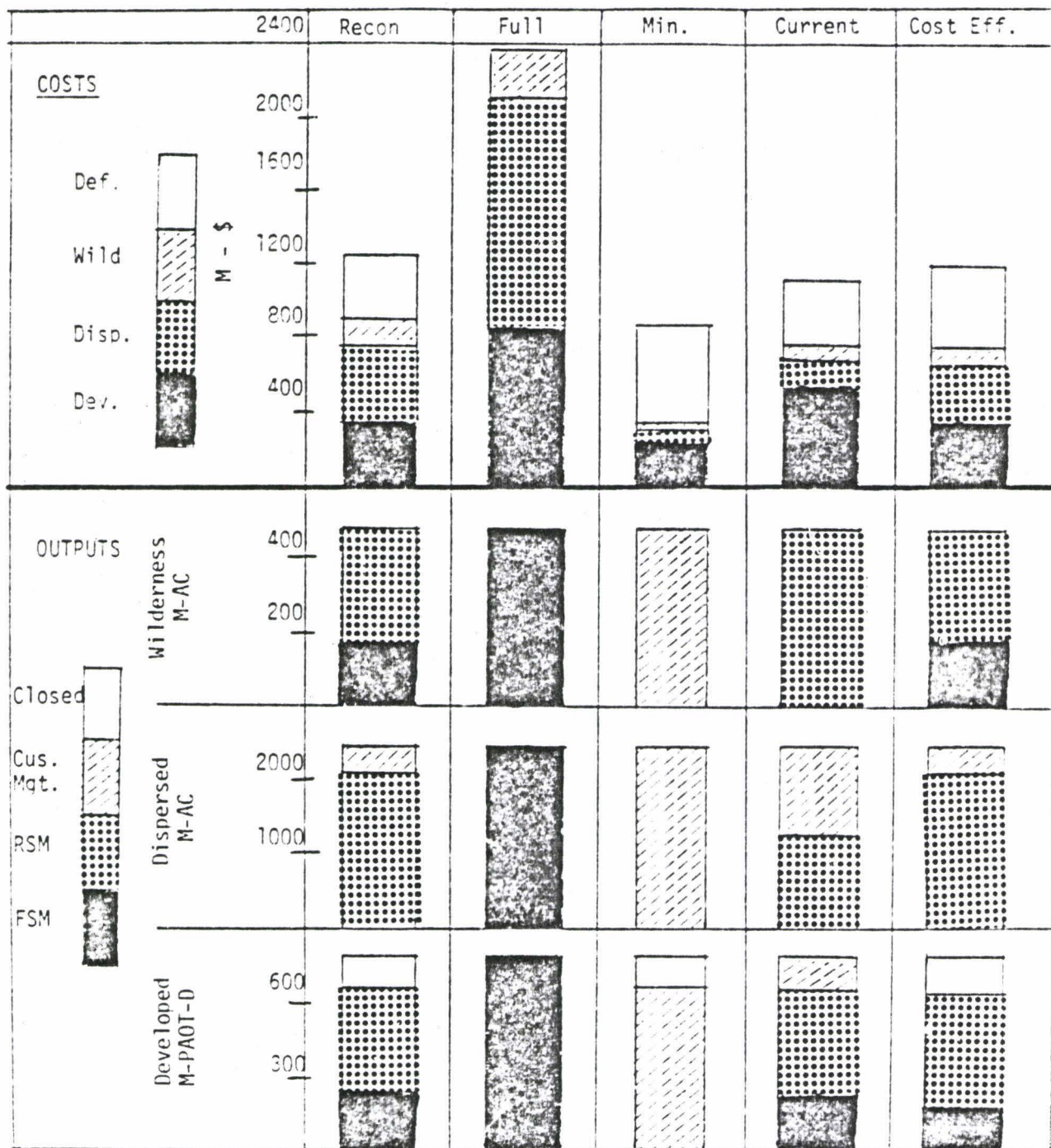
The alternative programs are shown in conventional terms in Figures 21 and 22.

Figure 21 - Comparison of Alternative Programs Using Developed
- Dispersed - Wilderness Categories

	Program				
	<u>Recom</u>	<u>Full</u>	<u>Min</u>	<u>Current</u>	<u>Cost Eff.</u>
<u>Costs M-\$</u>					
Developed Sites	388.6	829.4	210.2	535.0	344.4
Dispersed Areas	367.2	1,286.5	73.0	125.0	277.2
Wilderness	152.3	238.9	10.8	90.0	128.5
Deferred	312.5	0	578.0	400.6	451.7
Total	<u>1,220.6</u>	<u>2,354.8</u>	<u>872.0</u>	<u>1,150.6</u>	<u>1,201.8</u>
<u>Outputs</u>					
Developed (M-PAOT Days)					
FSM	249.7	789.9		240.0	177.8
RSM	408.3			425.0	480.2
Cus. Mgt.			658.0	124.9	
Closed	131.9		131.9		131.9
Dispersed (M-AC)					
FSM	32.7	2,468.1			32.7
RSM	2,125.4			1,250.0	2,125.4
Cus. Mgt.	310.0		2,468.1	1,218.1	310.0
Wilderness (M-AC)					
FSM	185.2	485.0			185.2
RSM	299.8			485.0	299.8
Cus. Mgt.			485.0		

Figure 22 - Comparison of Alternative Programs Using
Developed - Dispersed - Wilderness Categories.

P R O G R A M



APPENDIX B

Some Examples of Biophysical Change Indicators

Fish & Wildlife	Vegetation	Soil	Water	Air
-population	-area loss	-bulk density	-State standards	-State standards
-composition	-cover reduction	-drainage	-visual appearance	-visibility
-habitat quantity or quality	-composition change	-erosion rate	-turbidity	-particulate matter
-violations and/or harassments	-breakage or scarring	-area of bare soil	-O ₂ CO ₂	-sulfur dioxide
-T&E species	-root exposure	-condition class of campsites	-coliforms	
	-deterioration rate		-attributeable occurrences of human sickness	
	-T&E species			
	-condition class of campsites			

Some Examples of Social Change Indicators

Visitor Use	Encounters	Campsites	Trails	Other
-parties at trailhead per day	-parties met per trail segment	-number of sites	-width of trail	-number of violations
-parties in a management area per day	-parties met at destination per night	-size of site	-depth of trail	-number of search and rescues
-parties per activity	-visual encounters between campsites	-density of sites	-segments with drainage problem	-number and type of complaints (dissatisfactions)
-parties per size	-acoustic level at campsites	-visual quality	-multiple trailing	-improper low-impact visitor use
-parties per method of travel		-size, number, or density of campfire rings	-visual quality	-cultural resource disturbance
-parties per season				
-parties per peak periods, i.e., weekends holidays			-unsafe conditions for intended use	

APPENDIX C

Frissell's Campsite Condition Class and Possible Management Actions

Condition class	Visible indicators	Management
1.	Ground vegetation flattened but not permanently injured. Minimal physical change except for possibly a simple rock fireplace.	These sites are barely recognizable as camping areas. If not in situations known to be sensitive to use (e.g., wet or slump areas), no management action is necessary. Maintain current use level or allow increase if nearby sites must be closed.
2.	Ground vegetation worn away around fireplace or center of activity.	Site change now apparent but still within acceptable limits. These areas are readily identified as campsites and will continue to attract use. Future use should be carefully monitored to detect adverse change.
3.	Ground vegetation lost on most of the site, but humus and litter still present in all but a few areas.	This is a transitional condition. Considerable change in plant cover is evident but little sign of soil problems. The condition may be accepted as normal in areas of high attraction. However, modification of current use patterns and intensities may be needed to prevent further change.
4.	Bare mineral soil widespread. Tree roots exposed on the surface.	Deterioration is accelerating. If current level and type of use continues, soil erosion, loss of tree cover, and esthetic degradation are likely. Withdraw use from these sites and allow recovery. Some artificial rehabilitation may be desirable to speed recovery. If site is improperly located, permanent closure should be considered. If site is reopened, insure that use patterns are adjusted to prevent reinjury.
5.	Soil erosion obvious. Trees reduced in vigor or dead.	Natural recovery will be extremely slow. The sites should be closed permanently and alternate ones located. If the site is critical to the recreation pattern, extensive rehabilitation will be required to return it to acceptable condition.

APPENDIX D

ROS Program Computations

The following data and assumptions were used in developing the programs discussed in Chapter IV:

Acres by ROS Class

From Forest Plan data

Use by ROS Class

Dispersed Use - From Forest Plan data

Developed Sites - RIM* data for 1980 and sites summarized for ROS classes where located. Ski areas were prorated by acres in each ROS class. Use for programming purpose is estimated to remain in the range of -5% to +10% of the current use.

Capacity

Dispersed - Capacity determined from Forest Plan data which utilized ROS planning concepts

Developed - PAOT-Days were taken from RIM data. The PAOT-Days were then converted to capacity (RVD's) as follows:

Public Facilities, Resorts, etc:

$$\text{Cap. (RVD)} = \text{PAOT-Days} \times \frac{2 \text{ RVD}}{\text{Day}} \times 0.40 \text{ (Managed Level)}$$

$$\text{Cap. (RVD)} = 0.8 \text{ PAOT-Days}$$

Ski Areas

$$\text{Cap} = \text{PAOT-Days} \times \frac{7 \text{ hrs}}{\text{Day}} \times \frac{\text{RVD}}{12 \text{ hrs}} \times 0.70 \text{ (Managed Level)}$$

$$\text{Cap (RVD)} = 0.41 \text{ PAOT-Days}$$

Benefits

Calculated using following sources and values per RVD:

Developed Recreation	\$ 3.00/RVD	RPA
Dispersed Recreation	\$ 3.00/RVD	RPA
Private Recreation	\$ 3.75/RVD	Reg. Plan
Wilderness	\$ 8.00/RVD	RPA
Fishing	\$15.75/RVD	Reg. Plan
Hunting	\$25.20/RVD	Forest Plan
Downhill Skiing	\$ 9.15/RVD	NSAA Study

*Recreation Information Management

These values are for FSM. With reduced standards the values received would be less. Reductions made were:

Public Use RSM reduce 20%

Public Use Custodial Mgt. reduce 50%

No reductions in value were made for the Private Sector.

Costs

Estimated costs were based on a combination of Forest planning data and data from FY 82-84 programs. These were then converted to ROS class as follows:

<u>ROS Class</u>	<u>Cus. Mgt.</u>	<u>RSM</u>	<u>FSM</u>
Primitive (AC)	0.02	0.18	0.35
SPNM (AC)	0.02	0.20	0.40
SPM (AC)	0.03	0.10	0.40
Fac. (PAOT-Day)	0.20	0.40	1.00
RN (AC)	0.03	0.05	0.40
Fac. (PAOT-Day)	0.25	0.35	0.80
R&V (AC)	0.03	0.05	0.40
Fac. (PAOT-Day)	0.25	0.35	0.80

Cost of administration of permits on the private sector was estimated as follows:

1. Private Sector (other than Ski Areas):

FSM = $\frac{\$65,000}{75 \text{ Permits}}$ (from FY 84 Program)

= \$855/permit

RSM = \$0.05/PAOT Day (From FY 84 Program)

Cus. Mgt. = \$100/permit

2. Outfitters

FSM \$300/permit

RSM \$100/permit

Cus. Mgt. \$50/permit

3. Ski Areas

FSM - \$41,500 for 3 Areas

Prorated by use by ROS Class:

25% SPM

50% RN

25% R-U

RSM - estimated to be 50% of FSM

Cus. Mgt. - \$1,000 for each permit within a ROS Class

B/C Ratio (Benefit/Cost Ratio)

Simply a calculation of benefits to costs

Returns to the Treasury

Returns are from actual fee collections and special use permit fees. They were applied to the ROS Class where they were collected. Public sector (campground) fees are collected only at FSM. Special use fees are collected at each program level.

Program Levels

Various program levels can be developed. FSM (Full Service Management) and RSM (Reduced Service Management) are defined in the Regional Management Prescriptions (Direction) and Management Standards. The Custodial Management program can be equated to the General Management Prescription (Direction).

Monitoring and Rehabilitations

Both Management Prescriptions (Direction) and Management Standards call for monitoring sites for Frissel Condition Class. Rehabilitation is necessary when the Condition Class goes below 3 (Transitional Condition). The number of campsites per mile are estimated as follows:

	<u>Avg. Campsites per sq. mile</u>
Primitive	4
SPNM	6
SPM	6
RN	10
R&U	20

One-fifth of the total number of campsites need to be monitored to meet management direction.

The total number of campsites are estimated and then 1/5 are programmed for monitoring each year. One-fifth of the developed campsites are also monitored each year using Frissel Condition Classes.

For this paper the number of sites needing rehabilitation is estimated as follows:

10% of sites monitored x % of use compared to capacity

The cost is estimated to be \$1,000 per dispersed site and \$100 per developed site. These costs have not previously been included in program estimates.

A ratio of 25-30% of the program for monitoring and rehabilitation is considered reasonable.

Conditions of the public facilities are now being monitored using the RIM systems condition classes. This is already included in the cost estimates.

Other indicators of change would be monitored as the "Limit of Acceptable Change" concept develops. No other indicators are now in the standards and no others are included in this paper.

Backlog

Due to past program shortages a backlog of work has grown and remains to be done. This includes work needed to bring facilities up to standard as well as resource damage that has not been corrected.

RIM data indicates the backlog of work needed for facilities totals \$2,544.9M (\$1,741.1M in dispersed areas and \$803.8M in developed sites). It was estimated that 1/10 of this backlog should be accomplished each year.

There is also a backlog of resource damage in dispersed areas that needs to be corrected. Emphasis in this paper is given to rehabilitation of campsites. For this paper the backlog of sites needing rehabilitation is estimated to be equal to current rehabilitation needs (backlog accomplishment = current rehabilitation needs).

Using the above assumptions the annual backlog needs by ROS Class is:

P	\$ 16.2M
SPNM	66.7M
SPM	119.5M
RN	104.7M
R&U	21.4M
	<u>\$ 328.5M</u>

Program Calculations

Following are program calculations by ROS Class:

PRIMITIVE ROS CLASS

<u>Costs</u>	<u>Cus Mgt.</u>	<u>RSM</u>	<u>FSM</u>
Disp. (217.9M AC)	(.02) \$4.4M	(.18) \$39.2M	(.35) \$76.3M
Outfitters (10)	.5	1.0	3.0
	<u>\$4.9M</u>	<u>\$40.2M</u>	<u>\$79.3M</u>
<u>Benefits</u>			
M-RVD	<u>\$</u>		
Fishing	2.0 15.75	\$ 25.2M	\$ 31.5M
Hunting	3.0 25.20	60.5	75.6
Wild	12.9 8.00	82.5	103.2
Disp.	2.0 3.00	4.8	6.0
	<u>19.9</u>	<u>\$173.0M</u>	<u>\$216.3M</u>
<u>B/C Ratio</u>	22.1:1	4.3:1	2.7:1
<u>Returns to Treasury</u>			
Outfitters (10)	\$1.0M	\$1.0M	\$1.0M

SEMI-PRIMITIVE, NONMOTORIZED ROS CLASS

<u>Costs</u>	<u>Cus. Mgt.</u>	<u>RSM</u>	<u>FSM</u>
Disp. (816.8M Ac)	(.02) \$16.4M	(.20) \$163.4M	(.40) \$326.7M
Outfitters (30)	1.5	3.0	9.0
	<u>\$17.9M</u>	<u>\$166.4M</u>	<u>\$335.7M</u>

Benefits

	<u>M-RVD</u>	<u>\$</u>			
Fishing	19.0	15.75	149.6	239.4	299.2M
Hunting	28.5	25.20	359.1	574.5	718.2
Wild.	77.8	8.00	311.2	497.9	622.4
Disp.	64.7	3.00	97.1	155.3	194.1
	<u>190.0</u>		<u>917.0</u>	<u>1,467.1</u>	<u>1,823.9</u>

<u>B/C Ratio</u>	51.2:1	8.8:1	5.5:1
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Returns to Treasury

Outfitters	\$3.0M	\$3.0M	\$3.0M
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SEMI-PRIMITIVE MOTORIZED ROS CLASS

<u>Costs</u>		<u>Cus. Mat.</u>		<u>RSM</u>		<u>FSM</u>
Disn. (1,265.1M Ac)	(.03)	\$37.9 M	(.10)	\$126.5M	(.40)	\$506.0M
Dev. Public (12.8M)	(.20)	2.6	(.40)	5.1	(1.00)	12.8
Dev. Pvt.		0.1		0.1		2.6
Outfitters		2.5		5.0		15.0
Ski Areas		2.0		5.2		10.4
		<u>\$45.1M</u>		<u>\$141.9M</u>		<u>\$546.8M</u>

Benefits

	<u>MRVD</u>	<u>\$</u>			
Skiing	53.6	9.15	\$490.4M	\$490.4M	\$490.4M
Pvt. Sector	.3	3.75	1.1	1.1	1.1
Fishing	49.3	15.75	388.2	621.2	776.5
Hunting	74.0	25.20	932.4	1,491.8	1,864.8
Public	377.7	3.00	566.6	906.5	1,133.1
	<u>554.9</u>		<u>\$2,378.7M</u>	<u>3,511.0</u>	<u>\$4,265.9M</u>

<u>B/C Ratio</u>	52.7:1	24.7:1	7.8:1
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Returns to Treasury

Ski Areas	\$16.1M	\$16.1M	\$16.1M
Pvt. Permits	0.7	0.7	0.7
Outfitters (50)	5.0	5.0	5.0
	<u>\$21.8M</u>	<u>\$21.8M</u>	<u>\$21.8M</u>

ROADED NATURAL ROS CLASS

<u>Costs</u>	<u>Cus. Mgt.</u>	<u>RSM</u>	<u>FSM</u>
Disp. (619.2M Ac)	(.03) \$18.6M	(.05) \$31.0M	(.40) \$247.7M
Dev. Public (599.3M)	(.25) 149.8	(.35) 209.7	(.80) 479.4
Dev. Pvt.	2.5	3.5	21.4
Outfitters	1.0	2.0	6.0
Ski Areas	2.0	10.4	20.7
	<u>\$173.9M</u>	<u>\$256.6M</u>	<u>\$775.2M</u>

Benefits

	<u>MRVD</u>	<u>S</u>			
Skiing	108.3	9.15	\$990.9M	\$990.9M	\$990.9M
Pvt. Sector	32.1	3.75	120.4	120.4	120.4
Fishing	143.7	15.75	1,131.6	1,810.6	2,263.3
Hunting	59.5	25.20	749.7	1,199.5	1,499.4
Public	619.7	3.00	929.6	1,487.3	1,859.1
	<u>963.3</u>		<u>\$3,922.2M</u>	<u>\$5,608.7M</u>	<u>\$6,733.1M</u>

<u>B/C Ratio</u>	22.6:1	21.9:1	8:7:1
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Returns to Treasury

Ski Areas	\$32.3M	\$32.3M	\$32.3M
Pvt. Permits	5.8	5.8	5.8
Outfitters (20)	2.0	2.0	2.0
Campground			41.0
	<u>\$40.1M</u>	<u>\$40.1M</u>	<u>\$81.1M</u>

Benefit Changes w/Recommended Program

	<u>RSM</u>	<u>Cus. Mgt.</u>	<u>Diff.</u>
1. RSM Benefits			
Pvt. Sector	\$1,111.3M	\$1,111.3M	-
Fishing	1,810.6	1,131.6	679.0
Hunting	1,199.5	749.7	449.8
Public Disp.	765.6 (319.0	478.5	287.1
(319.0 x 2.4)	x 1.5)		
Public Dev.	721.7 (300.7	451.1	270.6
(300.7 x 2.4)	x 1.5)		
	<u>\$5,608.7M</u>	<u>\$3,922.2</u>	<u>\$1,686.5</u>

2. 50% Disp. Use Cus. Mgt.		
Diff. RSM to Cus. Mgt.		50% of Diff
Fishing	\$ 679.0M	339.5
Hunting	449.8	224.9
Public Disp.	287.1	143.6
	<u>\$1,415.9M</u>	<u>-708.0</u>

ROADDED NATURAL ROS CLASS (Con't.)

3. Close Sites - No Effect on Benefits

4. FSM for 70 PAOT - Days

$$\frac{70}{599.3} = 12\% \text{ of Program}$$

Dev. Sites Benefits

RSM	\$721.7M	
FSM (300.7 x 3)	902.1	<u>12% of Diff.</u>
Diff.	<u>180.4</u>	+21.6

RN Revised Benefits (Recommended Program)

RSM Benefits	\$5,608.7M
Less Disp. Cus. Mgt.	-708.0
Plus FSM Dev. Sites	+ 21.6
	<u>\$4,922.3M</u>

RURAL AND URBAN ROS CLASSES

<u>Costs</u>		<u>Cus. Mgt.</u>		<u>RSM</u>		<u>FSM</u>
Disp. (34.1M Ac)	(.03)	\$1.0M	(.05)	\$1.7M	(.40)	\$13.6M
Dev. Public (177.8)	(.25)	44.4	(.35)	62.2	(.80)	142.2
Dev. Pvt.		4.8		8.5		41.0
Ski Areas		2.0		5.2		10.4
		<u>\$52.2M</u>		<u>\$77.6M</u>		<u>\$207.2M</u>

Benefits

	<u>MRVD</u>	<u>\$</u>			
Skiing	60.4	9.15	552.7M	552.7M	552.7M
Pvt. Sector	121.1	3.75	454.1	454.1	454.1
Fishing	29.0	15.75	228.4	365.4	456.8
Public	260.5	3.00	390.8	625.2	781.5
	<u>471.0</u>		<u>\$1,626.0M</u>	<u>\$1,997.4M</u>	<u>\$2,245.1M</u>

<u>B/C Ratio</u>	31.1:1	25.7:1	10.8:1
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Returns to Treasury

Ski Areas	\$16.1M	\$16.1M	\$16.1M
Pvt. Permits	12.9	12.9	12.9
Campgrounds			34.2
	<u>\$29.0M</u>	<u>\$29.0M</u>	<u>\$63.2M</u>

Benefit Changes w/Recommended Program

1. RSM Benefits	\$1,997.4
2. FSM Public Dev. Sites	
Dev. Public Benefits	
RSM 115.4 x 2.4 =	277.0
FSM 115.4 x 3 =	346.2
Diff.	<u>+69.2</u>
Revised Benefits	\$2,066.6M

APPENDIX E

Calculation of Annual Monitoring and Rehabilitation Needs

	P	SPNM	SPM	RN	R&U
<u>Dispersed Areas - Sites to be Monitored</u>					
Total Acres (M)	217.9	816.8	1,265.1	619.2	34.1
Est. Camps/Sq.Mi.	4	6	6	10	20
Est. Total Camos	1,360	7,656	11,860	9,675	1,060
Total to Monitor (1/5)	272	1,531	2,372	1,935	212
Monitor Annually (1/5)	54	306	474	387	42
Wild 158 .85	46	.367 112			
Disp. 1,105 .15	8	.633 194	474	387	42
Total 1,263					

<u>Dispersed Areas - Rehab. Campsites</u>					
Camps Monitored	54	306	474	387	42
Use - % of Cap.	67%	60%	90%	17%	51%
Factor (Camps x %)	36	184	427	66	21
Rehab. (Factor x 1/10)	4	18	43	7	2
Wild 10 .85	3	.367 7			
Disp. 64 .15	1	.633 11	43	7	2
Total 74					

<u>Developed Sites - Rehab Campsites</u>					
Total Units*	-	-	20	908	270
Use - % of Cap.			79%	63%	81%
Factor (Camps x %)			15	572	218
Rehab (Factor x 1/10)			2	57	22
Total 81					

(Monitoring of Developed Sites Accomplished w/Facility
Condition Report of RIM)

$$\text{*Total Units} = \frac{\text{PAOT DAYS}}{\text{Ave. Seas. (132) x 5 People/Unit}}$$

APPENDIX F

Annual Backlog Work Needed to be Accomplished

	P	SPNM	SPM	RN	R&U
<u>Dispersed Areas</u>					
% of Forest	7%	28%	43%	21%	1%
Facility Needs					
from RIM (\$1,741.1M)	\$121.9M	\$487.5M	\$748.7M	\$365.6M	\$17.4M
Annual Accompl.					
(Need x 1/10)	12.2	48.7	74.9	36.6	1.7
Rehab. (#Camps x \$1,000)	4.0	18.0	43.0	7.0	2.0
Total \$M	<u>\$ 16.2M</u>	<u>\$ 66.7M</u>	<u>\$117.9M</u>	<u>\$43.6M</u>	<u>\$3.7M</u>
Wild 38.3 .85	13.8 .367	24.5			
Disp. 209.8 .15	2.4 .633	42.2	117.9	43.6	3.7
Total 248.1					
<u>Developed Areas</u>					
% of Camps (1198)	-	-	2%	76%	22%
RIM Backlog (\$803.8M)			\$16.1M	\$610.9M	\$176.8M
Annual Accompl.					
(Need x 1/10)			\$ 1.6M	\$ 61.1M	\$ 17.7M
Total \$80.4M					
<u>Grand Total - Annual Backlog - \$M</u>					
Wild 38.3	13.8	24.5			
Disp. 209.8	2.4	42.2	117.9	43.6	3.7
Dev. 80.4			1.6	61.1	17.7
Total \$328.5M	<u>\$16.2M</u>	<u>\$66.7M</u>	<u>\$119.5M</u>	<u>\$104.7M</u>	<u>\$21.4M</u>

APPENDIX G

CURRENT PROGRAM COST AND OUTPUT CALCULATIONS

CURRENT PROGRAM - COST CALCULATIONS

Dispersed Area Costs (O&M)

	Recom. Prog	Current	+Wild	Current Dispersed
P .15 x 79.3	11.9 x .5065	6.0	38.2	44.2
SPNM .45 x 166.4	74.9	37.9	51.8	89.7
SPM	131.5	66.6		66.6
RN	26.8	13.6		13.6
R&U	1.7	0.9		0.9
	<u>246.8</u>			
Current Prog.	125.0	125.0	90.0	215.0
Diff	-121.8			

$$\text{Ratio } \frac{\text{Current}}{\text{Recom.}} = \frac{125.0}{246.8} = 50.65\%$$

	Recom Prog	Current
Wilderness		
P.85 x 79.3	67.4 x .566	38.2
SPNM.55x166.4	91.5	51.8
	<u>158.9</u>	
Current Prog.	90.0	90.0
Diff	-68.9	

$$\text{Ratio } \frac{\text{Current}}{\text{Recom}} = \frac{90.0}{158.9} = .566$$

<u>Developed Site Costs (O&M)</u>		Recom & Current		Current
Public Sector	Recom	Current	Pvt Sector	Developed
SPM	5.1 x 1.245	6.4	5.3	11.7
RN	195.7	243.7	13.9	257.6
R&U	142.2	177.0	13.7	190.7
	<u>343.0</u>			
Current Prog	427.1	427.1	32.9	460.0
Diff	+ 84.1			

$$\text{Ratio } \frac{\text{Current}}{\text{Recom}} = \frac{427.1}{343.0} = 1.245$$

The \$75.0M Recreation Construction funds are used to reduce the backlog within the RN ROS Class.

No current rehabilitation is being accomplished

Developed Sites - Public (Available \$427.1M)

R&U	FSM 177.8 PAOT - Days @ 0.80 = \$142.2M
RN	FSM 62.2 (10%) @ 0.80 = 49.8
	RSM 425.0 (71%) @ 0.35 = 148.8
	Cus. Mgt 112.1 (19%) @ 0.25 = 28.0
SPM	Cus. Mgt 12.8 @ 0.20 = 2.6
	<u>789.9</u> <u>371.4</u>
	Non Target Expenses (Forest Plan, etc) 55.7
	<u>427.1</u>

Summary of Costs - Current Program

	<u>Disp</u>	<u>Dev</u>	<u>Pvt Sect</u>	<u>Const</u>	<u>Subtotal</u>	<u>%</u>	<u>Plan</u>	<u>Total</u>
P	44.2				44.2	6	3.3	47.5
SPNM	89.7				89.7	13	7.3	97.0
SPM	66.6	2.6	5.3		74.5	11	6.1	80.6
RN	13.6	226.6	13.9	75.0	329.1	47	26.2	355.3
R&U	0.9	142.2	13.7		156.8	23	12.8	169.6
	<u>215.0</u>	<u>371.4</u>	<u>32.9</u>	<u>75.0</u>	<u>694.3</u>		<u>55.7</u>	<u>750.0</u>

Summary Outputs - Developed Sites

	<u>M-PAOT Days</u>			<u>Summary</u>		
	<u>FSM</u>	<u>RSM</u>	<u>Cus. Mgt</u>	<u>FSM</u>	<u>RSM</u>	<u>Cus. Mgt</u>
R&U	177.8			100%		
RN	62.2	425.0	112.1	10%	71%	19%
SPM			12.8			100%
	<u>240.0</u>	<u>425.0</u>	<u>124.9</u>	<u>30%</u>	<u>54%</u>	<u>16%</u>

Current Program Outputs - Dispersed Areas

Total 2,953.1M-AC
P 217.9 RSM
2,735.2
1,517.1 RSM (55%)
1,218.1 Cus. Mgt (45%)

<u>Disp Areas</u>	<u>Summary M-AC</u>		<u>Summary %</u>	
	<u>RSM</u>	<u>Cus. Mgt</u>	<u>RSM</u>	<u>Cus. Mgt</u>
P	217.9		100	
SPNM	449.2	367.6	55	45
SPM	708.5	556.6		
RN	340.6	278.6		
R&U	18.8	15.3		
	<u>1,735.0</u>	<u>1,218.1</u>		

Benefits - Current Program

P	RSM 100%	\$ 173.0M
SPNM	RSM 0.55 x 1,467.1 = 806.9	
	Cus Mgt 0.45 x 917.0 = 412.6	\$1,219.5
SPM-RSM	3,511.0M	
(8.1) Less Pub. Dev.	19.4	
	3,491.6 x .55 = 1,920.4	
Cus. Mgt.	2,378.7	
(8.1) Less Pub. Dev.	12.2	
	2,366.5 x .45 = 1,064.9	
Plus Cus. Mgt. Dev Sites		
8.1 x 1.5	<u>12.2</u>	\$2,997.5

RN - RSM	\$5,608.7M	
(300.7) Less Pub. Dev.	<u>721.7</u>	
	4,887.0	$\times .55 = 2,687.8$
Cus Mgt	3,922.2	
Less Pub Dev	<u>451.0</u>	
	3,471.2	$\times .45 = 1,562.0$
Plus Dev Sites		
FSM	10% \times 300.7 \times 3	90.2
RSM	71% \times 300.7 \times 2.4	512.4
Cus Mgt	19% \times 300.7 \times 1.5	85.7
R&U - RSM	<u>1,997.4</u>	4,938.1
(115.4) Less Pub Dev	<u>277.0</u>	
	1,720.4	$\times .55 = 946.2$
Cus Mgt	1,626.0	
Less Pub Dev	<u>173.1</u>	
	1,452.9	$\times .45 = 653.8$
Plus Dev Sites - FSM		
115.4 \times 3	<u>346.2</u>	1,946.2
Total Benefits - Current Program		<u>11,274.3</u>

APPENDIX H

Conversion from ROS to Dev./Disp. System

Conversion from ROS to Dev/Disp. System Recommended and Cost Effective Programs

Costs	Recommended Program	Cost-Effective Program
<u>Dispersed</u>		
P-(15% Cost)	$.15 \times \$99.5 = 14.9$	$.15 \times 79.3 = 11.9$
SPNM (63.3% Cost)	$.633 \times 184.4 = 116.7$	$.633 \times 166.4 = 105.3$
SPM	131.5	131.5
Rehab	43.0	
Backlog	23.6	
RN	26.8	26.8
Rehab	7.0	
P&U	1.7	1.7
Rehab	2.0	
	<u>367.2</u>	<u>277.2</u>
<u>Wilderness</u>		
P (85% Cost)	$.85 \times \$99.5 = 84.6$	$.85 \times 79.3 = 67.4$
SPNM (36.7% Cost)	$.367 \times 184.4 = 67.7$	$.367 \times 166.4 = 61.1$
	<u>152.3</u>	<u>128.5</u>
<u>Developed</u>		
SPM	10.4	10.4
Rehab	0.2	
Backlog	0.3	
RN	209.6	178.1
Rehab	5.7	
P&U	155.9	155.9
Rehab	2.2	
Backlog	4.3	
	<u>388.6</u>	<u>344.4</u>
Total	908.1	750.1

Conversion

Targets

Dev. Sites

(M-PAOT Days)

SPM	RSM	12.8	12.8
RN (599.3) .12	FSM	71.9	
.66	RSM	395.5	467.4
.22	Closed	131.9	131.9
R&U	FSM	177.8	177.8
		<u>789.9</u>	<u>789.9</u>

Dev Sites - Summary

FSM	249.7	177.8
RSM	408.3	480.2
Closed	131.9	131.9
	<u>789.9</u>	<u>789.9</u>

Dispersed Areas	Recommended Program			Cost-Effective Program		
	FSM	RSM	Cus. Mgt.	FSM	RSM	Cus. Mgt.
P 15% x 217.9M AC	32.7			32.7		
SPNM 63.3% x 816.8		517.0			517.0	
SPM		1,265.1			1,265.1	
RN		309.2	310.0		309.2	310.0
R&U		34.1			34.1	
	32.7	2,125.4	310.0	32.7	2,123.0	310.0

Wilderness

P 85% x 217.9M AC	185.2			185.2		
SPNM 36.7% x 816.8		299.8			299.8	
Total	217.9	2,425.2	310.0	32.7	2,123.0	310.0

Dev/Disp Breakdown of
Costs of Full and Minimum Programs

Dispersed	FSM	Full Program		Min. Program
		Rehab	Backlog	Cus. Mgt
P (15%)	11.9	7.0	2.4	0.7
SPNM (63.3%)	212.5	11.0	42.2	11.3
SPM	521.0	43.0	117.9	40.4
RN	253.7	7.0	43.6	19.6
R&U	13.6	2.0	3.7	1.0
Subtotal	1,012.7	64.0	209.8	73.0
	1,286.5			
<u>Wilderness</u>				
P (85%)	67.4	3.0	13.8	4.2
SPNM (36.7%)	123.2	7.0	24.5	6.6
Subtotal	190.6	10.0	38.3	10.8
	238.9			
<u>Developed</u>				
SPM	25.8	0.2	1.6	4.7
RN	521.5	5.7	61.1	154.3
R&U	193.6	2.2	17.7	51.2
Subtotal	740.9	8.1	80.4	210.2
	829.4			
Totals	1,944.2	82.1	328.5	294.0
	2,354.8			

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Summary

The previous figures and discussion show a method of displaying program alternatives, both by ROS Classes and by the developed/dispersed breakdown. Deferred costs (rehabilitation and backlog needs) are displayed along with the direct appropriation costs. Opportunities and consequences can be clearly displayed for the decision makers.

Many programs can be developed between the minimum and the full program levels. Several factors could alter the programs presented, and could result in different conclusions. Some of these factors are:

Volunteer Contributions - Volunteers are being used to supplement current programs. Increased use of volunteers could reduce costs and increase management levels.

Returns to Treasury - The programs presented assume collections would remain at current level. Permit fees are set but campground fee collections could possibly be raised with increased emphasis on this program. Also the establishment of other user fees could greatly increase the returns to the treasury.

Benefits - Different benefit figures could be used. However, whatever benefit figures that are chosen, the programs would have a positive benefit: cost ratio.

Use Levels - Different use levels could be considered. The programs displayed all have the same use level. It was assumed that changes in use was more dependent on external factors, such as weather, economy, gas availability, etc., than on budget levels.

The Recommended Program is the best program when considering management direction, cost effectiveness and returns to the treasury. At a constrained budget level of \$750 M the Current Program emphasizes returns to the treasury and the Cost Effective Program emphasizes management direction and cost effectiveness.

The total costs of the Recommended, Current and Cost-Effective Programs are nearly the same. When deferred costs are included there is only \$70 M difference between them. It becomes a question of whether you pay now or pay later.

The program that is actually selected will depend on organization goals and objectives and on constraints placed on it by the administration.

V. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

The Recreation Opportunity Spectrum is useful in management. The concepts will be used in the implementation of plans, for evaluating management actions and for program development and budgeting.

Forest Plans are being developed using the Recreation Opportunity Spectrum. Management Prescriptions use the ROS concepts. These along with the Management Standards give management direction for each management unit. ROS concepts must be utilized when implementing these plans. Monitoring and evaluation activities will also relate to these prescriptions and standards.

Effects of proposed actions can be displayed using ROS terms and concepts. These can be from recreation projects or from projects involving other resources that affect the recreation opportunity. Effects on access, other resource uses, on-site management, social interaction, acceptability of visitor impacts and acceptable level of regimentation should be considered. Inconsistencies in the desired recreation opportunity should be addressed. Also the factors of relative availability and reproducibility need to be considered.

ROS is a good tool for program development and budgeting. The ROS concept can tie the recreation users' goals with management plans, programs and on-the-ground projects. By working with the recreation opportunity setting the results on the ground should be consistent with users' expectations. Programs can include consideration of the recreation opportunity objectives, management prescriptions and standards, use in relationship to capacities, levels and acceptability of change caused by the use, cost effectiveness and consequences and opportunities of different program levels.

Facilities are considered as an integral part of the recreation opportunity setting - not an entity in themselves. A recommended program was developed with more emphasis on dispersed area management, where the majority of the use and the resource impacts occur. "Developed site" management would remain static in the recommended program.

Recommendations

Managing with ROS will remain an abstract and an unapplied concept unless the following actions are taken:

1. A national effort to further develop the "Managing with ROS" concept. ROS needs to be incorporated into the RPA Assessment and Program of Work, into the Program Development and Budgeting Process, and into Management Attainment Reporting System. Without a uniform application the concept will be applied only sporadically and inconsistently. The goal of meeting the users' expectations can only be achieved with uniform application.
2. Management prescriptions (direction) and standards need to be rewritten using the ROS format. Physical, social and managerial settings need to be included in these direction statements. The concept of acceptable change should be described.

3. Continue to develop the concept of limits of acceptable change and implement these concepts on the ground. Continued research is needed in this areas. But recreation managers can begin to apply the concept on an interim basis, to gain experience in identifying indicators, and to develop measures to bring change back to acceptable limits. A communication network would be helpful to disperse the findings and successes that are experienced.
4. Develop a computer program to aid in programming with the ROS approach. Until present systems change, this program must include crosswalks to the present programming and reporting system. The program must include cost effectiveness and returns to the treasury to be successful.

Recreation managers are on the threshold of being able to consistently provide diverse recreation opportunities that meet the expectations of recreation user and the objectives of managers. ROS is accepted as a recreation planning concept and can be applied in implementing plans, in evaluating management actions and in developing programs and budgets. We can manage with ROS.

APPENDIX

- A. Excerpts from ROS Users Guide
- B. Examples of Biophysical and Social Change Indicators
- C. Frissell's Campsite Condition Class and Possible Management Actions
- D. ROS Program Computations
- E. Calculation of Annual Monitoring and Rehabilitation Needs
- F. Annual Backlog Work Needed to be Accomplished
- G. Current Program Cost and Output Calculations
- H. Conversion from ROS to Dev./Disp. System

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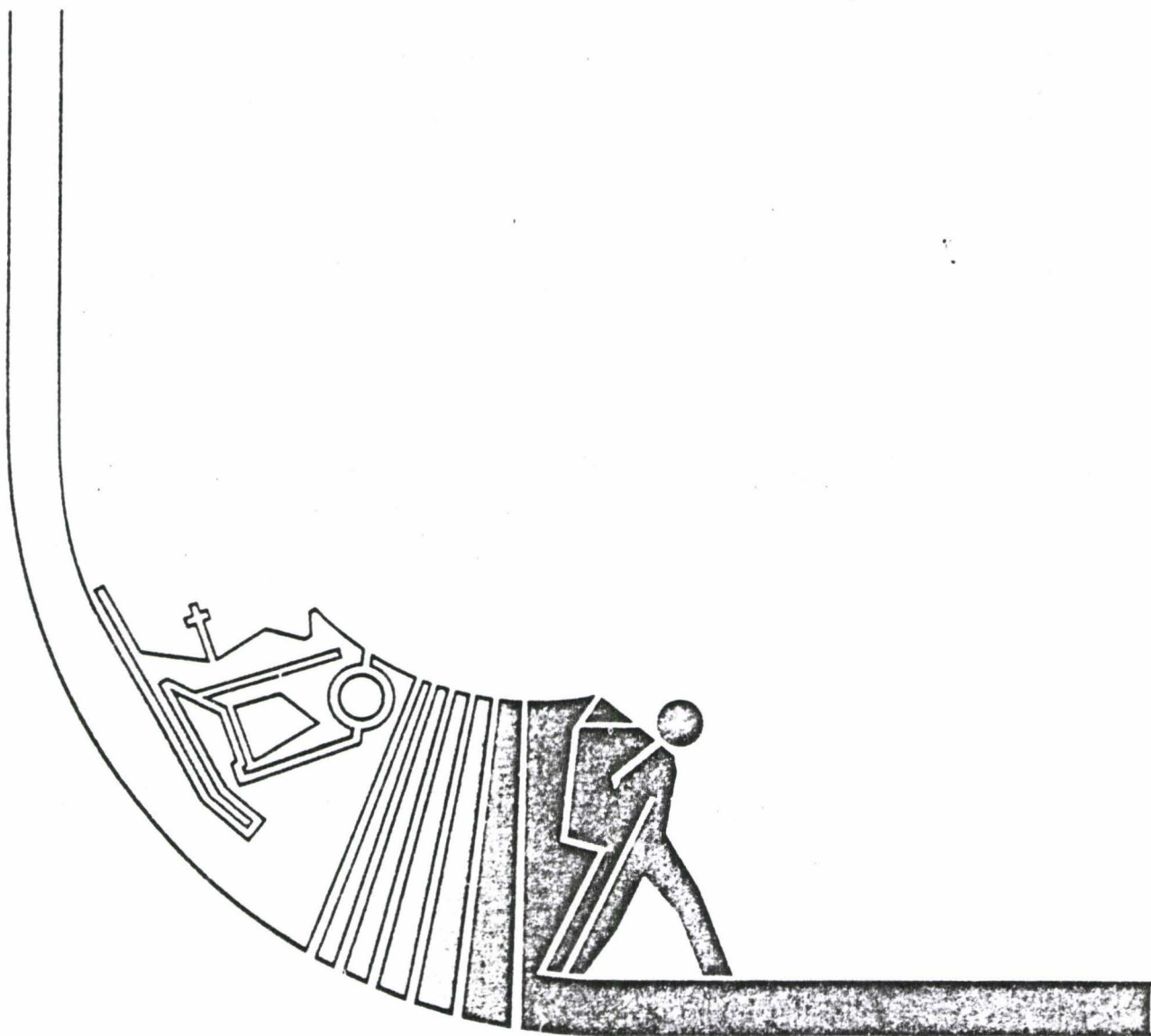
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ROS

Users Guide



11—RECREATION

Many definitions of recreation exist, each emphasizing some slightly different aspect of this complex phenomenon called "recreation." In the *Recreational Use of Wild Lands*, Frank Brockman defines recreation as "the pleasurable and constructive use of spare time." Howard Danford, in *Creative Leadership in Recreation*, defines recreation as "any socially desirable leisure activity in which an individual participates voluntarily and from which he derives immediate and continuing satisfaction." Webster defines recreation as "refreshment in mind and body."

The sense of creativeness, refreshment and pleasure which the recreationist has while recreating or having a good time can be viewed as the recreationist "realizing satisfactory experiences." The recreationist attains these satisfactory experiences by participating in preferred recreation activities in preferred surroundings or settings. Therefore although the recreation resource manager manages settings, he or she does so to provide opportunities for recreation experiences and the benefits those experiences produce for individuals and society. Those experiences are influenced by many factors, the settings, the activities, other resources present, activities by managers, and by the values, expectations and other characteristics of the recreationists. These factors interrelate to define outdoor recreationists' needs and the way these needs are met by management action.

"Managing for recreation requires different kinds of data and management concepts than does most other activities. While recreation must have a physical base of land or water, the product—recreation experience—is a personal or social phenomenon. Although the management is resource based, the actual recreational activities are a result of people, their perceptions, wants, and behavior." (From: Final Report of the Committee of Scientists for Implementation of Section 6 of the National Forest Management Act of 1976, February 22, 1979, as published in the Federal Register, Part V, May 4, 1979, p. 25628.)

12—RECREATION OPPORTUNITY

The word opportunity is defined as a "combination of circumstances favorable for a purpose." The purpose or goal of the recreationist, as discussed above, is to realize satisfying experiences. This is done by participating in preferred activities in preferred environmental settings. Thus, recreation opportunity is "the availability of a real choice for a user to participate in a preferred activity within a preferred setting, in order to realize those satisfying experiences which are desired."



13—RECREATION OPPORTUNITY SPECTRUM

While the goal of the recreationist is to obtain satisfying experiences, the goal of the recreation resource manager becomes one of providing the opportunities for obtaining these experiences. By managing the natural resource settings, and the activities which occur within it, the manager is providing the opportunities for recreation experiences to take place. Therefore, for both the manager and the recreationist, recreation opportunities can be expressed in terms of three principal components: the activities, the setting, and the experience.

For management and conceptual convenience possible mixes or combinations of activities, settings, and probable experience opportunities have been arranged along a spectrum, or continuum. This continuum is called the Recreation Opportunity Spectrum (ROS) and is divided into six classes (Figure 1). The six classes, or portions along the continuum, and the accompanying class names have been selected and conventionalized because of their descriptiveness and utility in Land and Resource Management Planning and other management applications.

Each class is defined in terms of its combination of activity, setting, and experience opportunities (Table 1). Subclasses may be established to reflect local or regional conditions as long as aggregations can be made back to the six major classes for regional or national summaries. An example of a subclass may be a further breakdown of Roaded Natural into subclasses based on paved, oiled, or dirt surfaced roads, which in turn reflects amount of use, or a further breakdown of Primitive based upon aircraft or boat use.

The Recreation Opportunity Spectrum provides a framework for defining the types of outdoor recreation opportunities the public might desire, and identifies that portion of the spectrum a given National Forest might be able to provide.

Figure 1

Recreation Opportunity Spectrum					
Primitive	Semi-Primitive Non-Motorized	Semi-Primitive Motorized	Roaded Natural	Rural	Urban

Table 1

ROS **Activity Characterization***

Primitive	Semi-Primitive Non-Motorized	Semi-Primitive Motorized	Roaded Natural	Rural	Urban
Land Based (includes Aircraft):					
Viewing Scenery Hiking and Walking Horseback Riding Camping (all) Hunting (all) Nature Study (all) Mountain Climbing General Information	Viewing Scenery Automobile (off-road use) Motorcycles and Scooters Specialized landcraft Aircraft (motorized) Hiking and Walking Horseback Riding Camping (all) Hunting (all) Nature Study (all) Mountain climbing General Information	Viewing Scenery Viewing Activities Viewing Works of Human Kind Automobile (includes off-road use) Motorcycles and Scooters Specialized landcraft Train and bus touring Aircraft (motorized) Aerial trams and lifts Aircraft (non-motorized) Hiking and Walking Bicycling Horseback riding Camping (all) Organization Picnicking Resort and Commercial services Resort Lodging Recreation Cabin use Hunting (all) Nature Studies (all) Mountain climbing Gathering Forest Products Interpretive Services (all)	Viewing Scenery Viewing Activities Viewing Works of Human Kind Automobile (includes off-road use) Motorcycles and Scooters Specialized landcraft Train and bus touring Aircraft (motorized) Aerial trams and lifts Aircraft (non-motorized) Hiking and Walking Bicycling Horseback riding Camping (all) Organization Picnicking Resort and Commercial services Resort Lodging Recreation Cabin use Hunting (all) Nature Studies (all) Mountain climbing Gathering Forest Products Interpretive Services (all)	Viewing Scenery Viewing Activities Viewing Works of Human Kind Automobile (includes off-road use) Motorcycles and Scooters Specialized landcraft Train and bus touring Aircraft (motorized) Aerial trams and lifts Aircraft (non-motorized) Hiking and Walking Bicycling Horseback riding Camping (all) Organization Picnicking Resort and Commercial services Resort Lodging	Viewing Scenery Viewing Activities Viewing Works of Human Kind Automobile (includes off-road use) Motorcycles and Scooters Specialized landcraft Train and bus touring Aircraft (motorized) Aerial trams and lifts Aircraft (non-motorized) Hiking and Walking Bicycling Horseback riding Camping (all) Organization Picnicking Resort and Commercial services Resort Lodging
Water Based:					
Canoeing Sailing Other non-motorized watercraft Swimming Fishing (all)	Boating (powered) Canoeing Sailing Other watercraft Swimming Diving (skin or scuba) Fishing (all)	Canoeing Sailing Other watercraft Swimming Diving (skin or scuba) Fishing (all)	Canoeing Sailing Other watercraft Swimming and waterplay Diving (skin and scuba) Waterskiing and water sports Fishing (all)	Canoeing Sailing Other watercraft Swimming and waterplay Diving (skin and scuba) Waterskiing and water sports Fishing	Canoeing Sailing Other watercraft Swimming and waterplay Diving (skin and scuba) Waterskiing and water sports Fishing
Snow and Ice Based:					
Snowplay X-Country Skiing/Snowshoeing	Ice and Snowcraft Skiing, downhill Snowplay X-Country Skiing/snow-shoeing	Ice and Snowcraft Ice Skating Skiing, downhill Snowplay X-Country Skiing/snow-shoeing	Ice and Snowcraft Ice Skating Skiing, downhill Snowplay X-Country Skiing/snow-shoeing	Ice and Snowcraft Ice Skating Skiing, downhill Snowplay X-Country Skiing/snow-shoeing	Ice and Snowcraft Ice Skating Skiing, downhill Snowplay X-Country Skiing/snow-shoeing

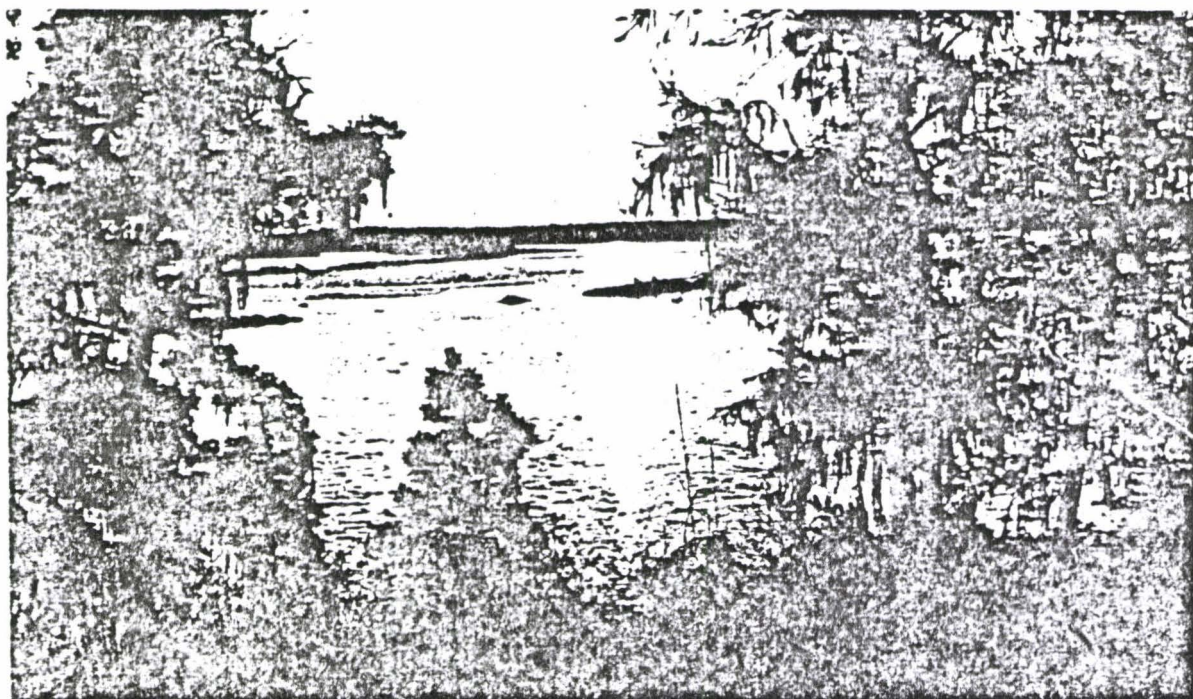
*These activity characteristics (from R1 M FSH 2309.11) are illustrative only. Specific additions or exception of activities within a ROS class may occur depending upon local forest situations.

Table 1 (continued)

ROS Setting Characterization*					
Primitive	Semi-Primitive Non-Motorized	Semi-Primitive Motorized	Roaded Natural	Rural	Urban
Area is characterized by essentially unmodified natural environment of fairly large size. Interaction between users is very low and evidence of other users is minimal. The area is managed to be essentially free from evidence of human-induced restrictions and controls. Motorized use within the area is not permitted.	Area is characterized by a predominantly natural or natural-appearing environment of moderate-to-large size. Interaction between users is low, but there is often evidence of other users. The area is managed in such a way that minimum on-site controls and restrictions may be present, but are subtle. Motorized use is not permitted.	Area is characterized by a predominantly natural or natural-appearing environment of moderate-to-large size. Concentration of users is low, but there is often evidence of other users. The area is managed in such a way that minimum on-site controls and restrictions may be present, but are subtle. Motorized use is permitted.	Area is characterized by predominantly natural-appearing environments with moderate evidences of the sights and sounds of man. Such evidences usually harmonize with the natural environment. Interaction between users may be low to moderate, but with evidence of other users prevalent. Resource modification and utilization practices are evident, but harmonize with the natural environment. Conventional motorized use is provided for in construction standards and design of facilities.	Area is characterized by substantially modified natural environment. Resource modification and utilization practices are to enhance specific recreation activities and to maintain vegetative cover and soil. Sights and sounds of humans are readily evident, and the interaction between users is often moderate to high. A considerable number of facilities are designed for use by a large number of people. Facilities are often provided for special activities. Moderate densities are provided far away from developed sites. Facilities for intensified motorized use and parking are available.	Area is characterized by a substantially urbanized environment, although the background may have natural-appearing elements. Renewable resource modification and utilization practices are to enhance specific recreation activities. Vegetative cover is often exotic and manicured. Sights and sounds of humans on-site are predominant. Large numbers of users can be expected, both on-site and in nearby areas. Facilities for highly intensified motor use and parking are available with forms of mass transit often available to carry people throughout the site.

*This table is for descriptive purposes only.

Use the five specific ROS class delineation criteria given in Table 2 to identify the actual areas to which these descriptions apply.



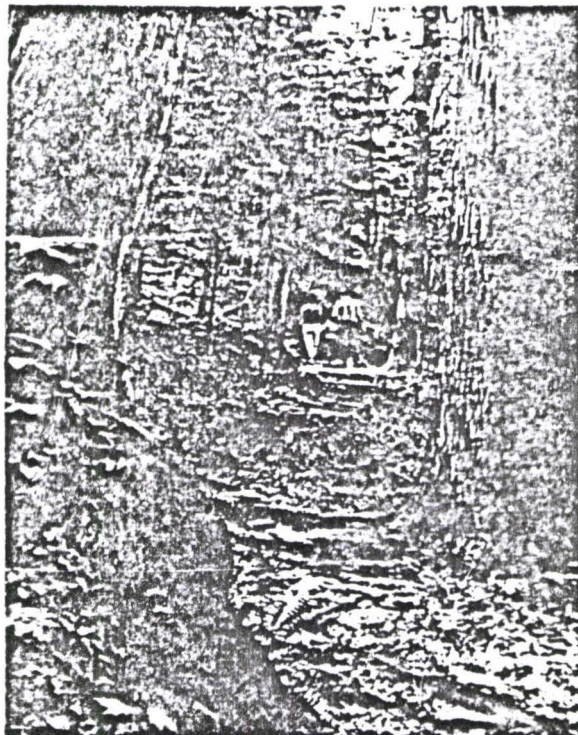
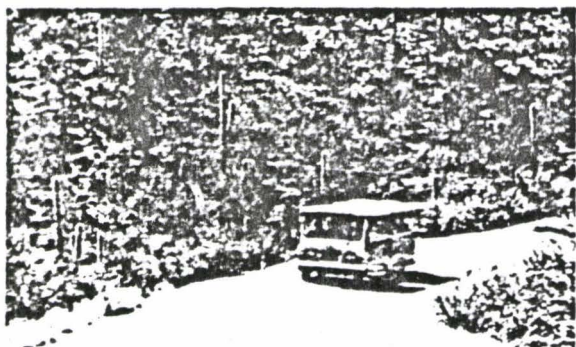
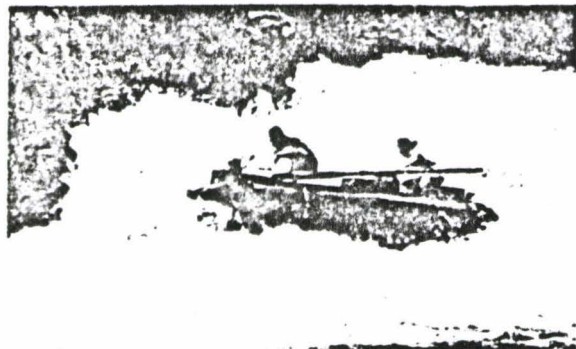


Table 1 (Continued)

ROS Experience Characterization*

Primitive	Semi-Primitive Non-Motorized	Semi-Primitive Motorized	Roaded Natural	Rural	Urban
Extremely high probability of experiencing isolation from the sights and sounds of humans; independence, closeness to nature, tranquility, and self-reliance through the application of woodsman and outdoor skills in an environment that offers a high degree of challenge and risk.	High, but not extremely high, probability of experiencing isolation from the sights and sounds of humans; independence, closeness to nature, tranquility, and self-reliance through the application of woodsman and outdoor skills in an environment that offers challenge and risk.	Moderate probability of experiencing isolation from the sights and sounds of humans; independence, closeness to nature, tranquility, and self-reliance through the application of woodsman and outdoor skills in an environment that offers challenge and risk. Opportunity to have a high degree of interaction with the natural environment. Opportunity to use motorized equipment while in the area.	About equal probability to experience affiliation with other user groups and for isolation from sights and sound of humans. Opportunity to have a high degree of interaction with the natural environment. Challenge and risk opportunities associated with more primitive type of recreation are not very important. Practice and testing of outdoor skills might be important. Opportunities for both motorized and non-motorized forms of recreation are possible.	Probability for experiencing affiliation with individuals and groups is prevalent, as is the convenience of sites and opportunities. These factors are generally more important than the setting of the physical environment. Opportunities for wild-land challenges, risk-taking, and testing of outdoor skills are generally unimportant, except for specific activities like downhill skiing, for which challenge and risk-taking are important elements.	Probability for experiencing affiliation with individuals and groups is prevalent, as is the convenience of sites and opportunities. Experiencing natural environments having challenges and risks afforded by the natural environment, and the use of outdoor skills are relatively unimportant. Opportunities for competitive and spectator sports and for passive uses of highly human-influenced parks and open spaces are common.

*These experiences are highly probable outcomes of participating in recreation activities in specific recreation settings.

Table 3

Remoteness Criteria*					
Primitive	Semi-Primitive Non-Motorized	Semi-Primitive Motorized	Roaded Natural	Rural	Urban
An area designated at least 3 miles from all roads, railroads or trails with motorized use	An area designated at least ½-mile but not further than 3 miles from all roads, railroads or trails with motorized use; can include the existence of primitive roads and trails if usually closed to motorized use.	An area designated within ½-mile of primitive roads or trails used by motor vehicles; but not closer than ½-mile from better than primitive roads.	An area designated within ½-mile from better than primitive roads, and railroads.	No distance criteria.	No distance criteria.

*The criteria can be modified to conform to natural barriers and screening, or other relevant features of local topographic relief and vegetative cover. This fits the criteria to the actual Forest landscape.

Table 4

Size Criteria					
Primitive	Semi-Primitive Non-Motorized	Semi-Primitive Motorized	Roaded Natural	Rural	Urban
5,000 acres*	2,500 acres**	2,500 acres	No size criteria.	No size criteria.	No size criteria.

*May be smaller if contiguous to Semi-Primitive Nonmotorized Class

**May be smaller if contiguous to Primitive Class

Evidence of Humans Criteria

Primitive	Semi-Primitive Non-Motorized	Semi-Primitive Motorized	Roaded Natural	Rural	Urban
Setting is essentially an unmodified natural environment. Evidence of humans would be unnoticed by an observer wandering through the area.	Natural setting may have subtle modifications that would be noticed but not draw the attention of an observer wandering through the area.	Natural setting may have moderately dominant alterations but would not draw the attention of motorized observers on trails and primitive roads within the area.	Natural setting may have modifications which range from being easily noticed to strongly dominant to observers within the area. However from sensitive travel routes and use areas these alterations would remain unnoticed or visually subordinate.	Natural setting is culturally modified to the point that it is dominant to the sensitive travel route observer. May include pastoral, agricultural, intensively managed, wetland, resource landscapes, or utility corridors. Pedestrian or other slow moving observers are constantly within view of culturally changed landscape.	Setting is strongly structure dominated. Natural or natural-appearing elements may play an important role but be visually subordinate. Pedestrian and other slow moving observers are constantly within view of artificial enclosure of spaces.
Evidence of trails is acceptable, but should not exceed standard to carry expected use.	Little or no evidence of primitive roads and the motorized use of trails and primitive roads.	Strong evidence of primitive roads and the motorized use of trails and primitive roads.	There is strong evidence of designed roads and/or highways.	There is strong evidence of designed roads and/or highways.	There is strong evidence of designed roads and/or highways and streets.
Structures are extremely rare.	Structures are rare and isolated.	Structures are rare and isolated.	Structures are generally scattered, remaining visually subordinate or unnoticed to the sensitive travel route observer. Structures may include power lines, microwave installations and so on.	Structures are readily apparent and may range from scattered to small dominant clusters including power lines, local ski areas, minor resorts and recreation sites.	Structures and structure complexes are dominant and may include major resorts and major national and regional ski areas, towns, industrial sites, condominiums or second home developments.

In many southern and eastern forests what appears to be natural landscapes may in actuality have been strongly influenced by humans. The term "natural-appearing" may be more appropriate in these cases.

**Sensitivity level 1 and 2 travel routes from Visual Management System USDA Handbook 461.

Table 6

Social Setting Criteria*

Primitive	Semi-Primitive Non-Motorized	Semi-Primitive Motorized	Roaded Natural	Rural	Urban
Usually less than 6 parties per day encountered on trails and less than 3 parties visible at campsite.	Usually 6 - 15 parties per day encountered on trails and 6 or less visible at campsite.	Low to moderate contact frequency.	Frequency of contact is Low to Moderate to High on roads. Low to Moderate on trails and away from roads.	Frequency of contact is Low to Moderate to High in developed sites, on roads and trails, and water surfaces. Moderate away from developed sites.	Large numbers of users onsite and in nearby areas.

*These criteria apply during the typical recreation use season. Peak days may exceed these limits.

**Specific numbers must be developed to meet regional or local conditions.

Table 7

Managerial Setting Criteria

Primitive	Semi-Primitive Non-Motorized	Semi-Primitive Motorized	Roaded Natural	Rural	Urban
On-site regimentation and controls [†] present primarily off-site.	On-site regimentation and controls [†] present but subtle.	On-site regimentation and controls [†] present but subtle.	On-site regimentation and controls [†] are noticeable, but harmonize with the natural environment.	Regimentation and controls [†] obvious and numerous, largely in harmony with the man-made environment.	Regimentation and controls [†] obvious and numerous.

[†]Controls can be physical (such as barriers) or regulatory (such as permits).

19 MAR 1993

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